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WEAVING NARRATIVES



ABSTRACT BOOK

29TH EAA ANNUAL MEETING

30TH AUGUST - 2ND SEPTEMBER 2023



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An Roinn Tithíochta,
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Local Government and Heritage



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29th EAA Annual Meeting (Belfast, Northern Ireland 2023) - Abstract Book

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ABSTRACT BOOK

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2 **ARCHAEOLOGY, LANDSCAPE AND THE SKYSCAPE. HOW MATERIAL ARCHEOLOGY IS WOVEN WITH DIFFERENT ONTOLOGICAL AND CULTURAL INTERPRETATIONS [SEAC-EAA]**

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Balbi, Jose (Colchester Archaeological Group; Dirección de Cultura y Educación de Buenos Aires) - de la Vega, Hans Martz (Escuela Nacional de Antropología e Historia) - Iwaniszewski, Stanislaw (State Museum of Archaeology, Warsaw) - Mejuto, Javier (Archeoastronomy & Cultural astronomy dep, Space sciences. Universidad Nacional Autónoma de Honduras)

Session format: Regular session

This session is the continuation of the sessions of the last three years and belongs to the SEAC-EAA community. Our goals coincide with those of the community.

We consider that one of the aspects of the relationship between archeology and cultural astronomy has been the interconnection between celestial bodies and humans. The orientation of the archaeological structures towards certain stars or features of the landscape have been one of the greatest evidences of their ontological and cultural importance. By studying star alignments with ancient constructions, we can learn about the relationships of past human societies with celestial bodies, landscape, and phenomena. From our point of view, places with cosmic connections could have generated “new assemblages” (a term borrowed from Gilles Deleuze and Feliz Guattari) of objects, human and natural, revealing sets of practices and materialities situated in time. We propose to study them and give them a cultural and ontological meaning.

Therefore, some of the issues that the papers in this session should address are: is it possible to understand how people lived in their environment by observing and studying the landscape, the sky or any other aspect of an archaeological site? How technology and new techniques allow us to understand known data? What is the ontological relationship between people and their environment? How can the construction of old buildings be understood from a skyscape or landscape point of view? The purpose of the session is to carry out an archaeological study with multidisciplinary contributions. To achieve our goals, we supplement the archaeological data with those of other sciences.

ABSTRACTS

1 **IN SEARCH OF THE INKA - MAPUCHE BORDER. ARCHAEOLOGICAL ACCOUNT OF A MILITARY, CULTURAL AND LINGUISTIC CONFRONTATION**

Abstract author(s): Balbi, Jose (Colchester Archaeological Group)

Abstract format: Oral

The Mapuche ethnic group constitutes a series of aboriginal originating in South America, in the western zone of the Andes Mountains. At some point in history (and this is still a matter of discussion), benefiting from the Spanish invasion of America, they spread over the Andes and conquered vast territories on the eastern part, in what is now Argentina. When and how they came to occupy part of Patagonia is not the subject of this paper but the relation and fights against a series of tribes that a number of histories, accounts and others mention as „Aimaras“ or „Diaguitas“. The local tribes had divinities based on nature, including the sun, but they did not have the same feeling towards the rocks, very important in Inka cosmology and considered from a diabolical origin. Between them, we will find matching elements, both in beliefs, customs, symbology and architecture. We have surveyed areas further south of the traditional limits imposed on Inka expansion and we can affirm that the elements of material archeology, landscape and astronomical orientation found at the height of parallel 38° and 39°, corresponds to the Inka culture, expanding the current idea that locates them at the 32° parallel. It is there where the border was in 1532, when the meeting between Atahualpa and Pizarro occurred in Cajamarca, determining the end of the confrontations: The situation urges Atahualpa to require all the military, treasures and the end of the expansion, giving rise to the belligerent tribes can expand to the East. Our archaeological and museological research in the Argentinean Patagonia area leads us to this demonstration of contact and aims to provide us with some answers about whom the descendants of these ethnic groups really are, and who currently occupy these vast territories in the southernmost part of the world.

2 **EXTREME SOLAR POSITIONS ANALYSIS IN AYASTA ROCK SHELTER, HONDURAS**

Abstract author(s): Mejuto, Javier - Rodas-Quito, Eduardo (Universidad Nacional Autonoma de Honduras)

Abstract format: Oral

Ayasta is considered one of the main rock art sites in Honduras. Formed by three small consecutive rock shelters, it has a large number of scenes and stations archaeologically interpreted as a Proto-Lenca vestige, dated around the

year 1000 CE. Likewise, work has been done and continuous reference has been made to the anthropomorphic, zoomorphic and anthropozoomorphic elements of the site proposing ritual uses for the shelter. However, there is a great variety and quantity of astromorphs that allow an exhaustive analysis of the possible methodical astronomical observation and the use of this knowledge for the Proto-Lencans. In this contribution we explore some of the astromorphs that appear in the rock shelter of Ayasta, Honduras. In particular, the geometric elements in the winter solstitial and equinoctial events are analyzed. The probable relevance of the astronomical significance, both in solstices and in the equinoxes is supported by several solar astromorphs at the edges of the rock shelters and results of preliminary observations on site.

Finally, we present the preliminary conclusions of the data gathered in relation with interconnected shelters in the area and other astromorphs of this culture in Honduras.

3 THE LAST RESTING PLACE OF THE STARS IN THE KAWÁ SÍSQUI CAVE, GUERRERO, MEXICO: ARCHAEOASTRONOMY AND AGRICULTURAL CYCLES

Abstract author(s): Martz de la Vega, Hans (Escuela Nacional de Antropología e Historia / National School of Anthropology and History, Mexico) - Pérez Negrete, Miguel (Instituto Nacional de Antropología e Historia, México)

Abstract format: Oral

In Mesoamerica, there are few caves and rock shelters with rock art attributed to the Olmecs, and even less with some type of archaeoastronomical and landscape study. One of these cases is the Kawá Sísiqui Cave (also known as Cahuaziziqui), initially documented by Samuel Vilella Flores, who visited it in 1986 and disseminated it since 1989. In this presentation we will show some of the first ideas we have worked on, based on the observations and questions that Vilella Flores has made about the local horizon and the stars represented in the present paintings. We will also add details of the iconography based on his drawings and what can still be seen.

Undoubtedly, from those times, towards the end of the Early Preclassic period (1200 BC), the Olmecs already had a special interest in the ordering of time and space based on the agricultural cycle and their worldview, and this can be said because, precisely with them we have the first evidence of orientation of civic-ceremonial centers and architectural structures, as well as the record of the passage of the Sun through the local horizon and representations around maize, as one of its main deities.

From Kawá Sísiqui it is possible to observe the region of the great volcanoes of Mexico, such as Citlaltépetl-Popocatepetl, in addition to forming a natural alignment with them, which also marks the astronomical north, a suggestive direction to support certain ideas about representations of the main panel of paintings.

The shape of the cave allows to postulate a place of observation of the sky since it is the region of the horizon where the Sun and Venus reach their extremes. This is reinforced by the presence of a possible representation of the god of maize, another of maize itself, as well as germinating plants.

4 SPATIAL DISTRIBUTION AND LANDSCAPE OF SOLAR SYMBOLS IN THE PETROGLYPHS OF CHECTA - PERU

Abstract author(s): d'Ans Alleman, Barthélemy (Instituto Peruano de Astronomía; Planetarium Maria Reiche)

Abstract format: Oral

This contribution consists of the study of the orientations and arrangement of pre-Columbian petroglyphs of solar symbols found among the 450 stone blocks of volcanic origin in an area of 8000 square meters of the Checta archaeological site located 1000 meters above sea level in the western foothills of the southern Andes in the province of Canta Valle de Chillón in Peru. The chronology generally associated with this vast rock art complex would be linked to the Early Intermediate Period (200-600 BC) (Guffroy 1987). More recent studies maintain that it would be associated from the „Initial period“ of the Andean chronology (2000 - 1000 years BC) (Echevarría and Ruiz 2007). In other words, there are at least four different stages of rock production (Echevarria 2003). For this record, a non-invasive visual method was used, generating three-dimensional photogrammetric molds of the stone blocks and the raising of landscape profiles for each of the astromorphs in order to verify if they have use-function orientations related to the rising and setting of the sun on certain dates or if the panels present shadows or lighting in certain periods of time.

5 ARCHAEOASTRONOMICAL RESEARCH AT TENAM PUENTE, CHIAPAS, MEXICO

Abstract author(s): Iwaniszewski, Stanislaw (Posgrado en Arqueología Escuela Nacional de Antropología e Historia - Instituto; State Archaeological Museum, Warsaw) - Galindo Trejo, Jesús (Institute of Esthetic Research, National Autonomous University of Mexico)

Abstract format: Oral

The site of Tenam Puente, located in the eastern part of the Chiapas Highlands, has long remained absent from archaeoastronomical research. However, it was an important Maya city that flourished between the Classic and Post-classic periods (approx. 500 – 1100 CE). The Acropolis stands out among the architectural assemblages found on the site, with the most important civic and religious buildings. The northeast section of the Acropolis constitutes one of the highest points with a great domain of the Comitán Valley. In the present paper, we will present the results of archaeoastronomical research carried out within the Acropolis, including Structures 7 and 42, as well as their possible relationship with the surrounding area. Our study was performed in situ, with a survey by a theodolite supplemented with a Brunton compass and a GPS receiver. In our presentation, we will show how combining land- and sky-scape elements with the specificities of Maya ritual-mantic and solar calendars can offer a satisfactory explanation for the particular building orientation.

6 REFLEXIVITY AMONG THE STARS: REASSESSING ONE OF ARCHAEOASTRONOMY'S DEEPEST-HELD BELIEFS

Abstract author(s): Silva, Fabio (Bournemouth University)

Abstract format: Oral

A recent analysis of the history of archaeoastronomy as an academic endeavour has concluded that it never matured beyond what could be called an 'emerging field'. The ability to turn a critical eye upon itself, to reflect on its own assumptions and long-held beliefs, is a key ingredient in a field's ability to regenerate itself in light of new discoveries and methodological and theoretical advancements. This paper will argue that this is an aspect of a mature field of academic study that has been missing from archaeoastronomy, and one that continuously works to stymie dialogue with the sister fields of archaeology and anthropology. This point will be illustrated by focusing on the often repeated logic that, because there are many stars in the sky, and their rising and setting positions change over the centuries, it is easy to find a star that appears to fit any randomly selected structural orientation – an argument that is used to shun, dismiss and discourage stellar alignments. This argument is statistical in nature and, as such, it will be here tested by formalising it under a statistical framework. By doing this, it will be shown that a (properly researched) stellar alignment is no more no less likely than a solar alignment, thereby demolishing the long-held belief that stops researchers from seriously considering the stars as targets of alignments. In addition, the overwhelming evidence for the importance of the stars, constellations and the Milky Way in the historical and ethnographic records from all over the world, will be summarised and brought to bear on the busting of this myth. This talk aims to restore the role of the stars and Milky Way as key celestial targets that should be regarded on equal footing with the solar and lunar targets routinely employed by archaeoastronomers.

7 TOLOTZIN AND THE CONTINUITY OF TIME. THE ARCHITECTURE OF CERRO TOLOCHE AND ITS RELATIONSHIP WITH THE LANDSCAPE AND THE SKY

Abstract author(s): García Reyna, Ricardo Arturo (Escuela Nacional de Antropología e Historia)

Abstract format: Oral

The Cerro Toloche archaeological site is located on one of the peaks (2800 masl) of the Sierrita de Toluca, in the capital of the State of Mexico. According to technical reports, the site was occupied during the Postclassic period (900-1521 AD) and has been associated with the Matlatzincas (an ethnic group that lived in the Toluca Valley). According to historical sources from the 16th century, Cerro Toloche is associated with Coltzin or Tolotzin, an ancient deity of fire, who among his many associations is the account of time.

The architecture of the site exhibits a spatial orientation associated with the rising and setting of the solar disk at significant dates and intervals within the Mesoamerican count of time. Likewise, certain prominent features in the eastern and western local horizons indicate the rising and setting of the sun at significant moments, such as the solstitial extremes.

Relying on the theoretical approaches of the researcher Stanislaw Iwaniszewski (the agency of the forms of the landscape and the orientations of pre-Hispanic architecture as detonators of the social field of relations) in the present exhibition we seek to rethink Cerro Toloche beyond the approach that defines it as a site of pre-Hispanic astronomical observation, and rethinking it as a form of the landscape that carries an agency associated with the account and continuity of time, from which a series of relationships between the forms of the landscape, celestial bodies and human activities are activated.

8 A CELTIC EARLY CHRISTIAN ORATORY IN NEW ENGLAND?: VERMONT STONE CHAMBER #32

Abstract author(s): Tiede, Vance (Astro-Archaeology Surveys; Yale University alumnus)

Abstract format: Oral

While New England's drywall stone chambers are typically attributed to Anglo-American farmers AD 1600–1900 (Neudorfer 1980, 2-3), archaeological evidence also suggests an Early Christian monastic provenance ca. AD 500–1200 consistent with the "Terra Repromissionis Sanctorum" of the NAVIGATIO SANCTI BRENDANI ABBATIS (Goodwin 1946, Selmer 1959, Severin 1978).

Null Hypothesis: "There is no physical evidence of pre-medieval Celtic monastic provenance for Chamber #32, Windsor County, Vermont."

Methodology & Findings. Test for Presence/Absence along the following lines of evidence to falsify the Null Hypothesis:

– Astro-Archaeology: Solar alignments signaling the Divine Hours commemorating the crucifixion of Jesus prior to Passover (first Full Moon after the Vernal Equinox). The single window of Gallarus Oratory's (Séipéilín Ghallaraís, County Kerry) admits sunlight at 9am (Terce, 11rd Hour, Mark 15:25) on the Vernal Equinox. The single window of Vermont Chamber #32 admits sunlight on the Vernal Equinox which extinguishes on a Romano-British Chi-Rho (XP) at 3pm (None, 1Xth Hour, Mark 15:34), i.e., a metaphor for the death of "Christus Sol Verus" (Thomas 1985, Fig 5 (5), 89; Tiede 2001, Sedulius Scottus ca. 850).

– Iconography: Hiberno-Latin "nomina sacra" and Romano-British rock art. Vermont Chamber #32 petroglyphs include: XP (Greek: ChRist), A(lpha), O(mega), Antr(on, Greek: tomb) and a Sun Cross slab (Revelation 1:8, 21:6-7, 22:13; Fell 1983, 183; Thomas 1985, Fig 5(5) & (7), 89; Dexter 1986).

– Metrology: Floor-plan dimensions of Celtic Early Christian rectangular oratories. Rathlin O'Birne Isle #10 (County Donegal) and Vermont Chamber #32 share a common floor-plan, viz., a quasi-Pythagorean Triple (13:26:29) length-to-width ratio in commensurate 13x26 Justinian Byzantine "σπιθαμή" (Walsh 1983, 61).

– Palaeoethnobotany: Pollen/Phytoliths in sediment cores from Britain and Ireland plants introduced into New England ca. 1500–800 BP (<https://www.neotomadb.org/>). Three such possible plant species (Arctium minus, Brassica nigra, and Cirsium lanceolatum) were used in Algonkian Indian traditional medicine (Tantaquidgeon 1972, 115-116).

9 THE DIRECTION OF FREEDOM: LIBERTY PLIGHT IN COLONIAL MAURITIUS

Abstract author(s): Caval, Saša (Scientific-research center of the SAZU) - Cianciosi, Alessandra (University of Amsterdam)

Abstract format: Oral

Mauritius, an island in the SW Indian Ocean, was unpopulated until the 17th century. The Dutch brought the first enslaved people to Mauritius in 1639 from Madagascar. Throughout almost 200 years of slavery, the enslaved community developed their own elements of culture and negotiated their existence in Mauritius any way they could. The beacon of resistance was the establishment of a 'Maroon republic' in the southwestern cape of the island. The area is today protected as UNESCO Le Morne Cultural Landscape due to its exceptional testimony to maroonage (resistance to slavery) in terms of the mountain Brabant being used as a fortress to shelter escaped enslaved people.

This paper will address a burial ground called the Le Morne "Old cemetery," located southeast of Brabant Mountain. Our archaeological research of the cemetery revealed genetic links to Madagascar. However, observing the cemetery itself carefully, the burials and the landscape display other links both to Madagascar and the idea of freedom. The plight of enslaved on their deathbed and the freedom symbolism of the Le Morne mountain is written in the alignments of the graves at le Morne cemetery: over 40 graves at Le Morne cemetery were preserved for at least 200 years. Somebody was maintaining the graves every time the beach sand covered them. Throughout time, the original alignment slowly changed due north. The 'path' is visible in phases of the grave structures. The final (extreme) alignments are extremely vocal: the original azimuths of graves point towards the island of Madagascar itself, while the 'newest' alignment is directed toward the 'maroon republic'.

MODERN APPROACHES TO THE STUDY OF LANDSCAPE IMPROVEMENT AND THE CREATION OF SUSTAINABLE AGRICULTURAL SYSTEMS

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Albert, Rosa Maria (ICREA - Catalan Institution for Research and Advanced Studies; Dept. of Prehistory. Autonomous University of Barcelona) - Fallu, Daniel (UiT: The Arctic University Museum of Norway) - Walsh, Kevin (Department of Archaeology. University of York) - Alonso-Eguiluz, Monica (Maritime Cultures Research Institute - MARI, Vrije Universiteit Brussels) - Brown, Antony (The University Museum, The Arctic University of Norway, Tromsø; The Palaeo Lab, Geography & Environment, University of Southampton)

Session format: Regular session

The creation and demarcation of agricultural space is a social product that reflects the culture and history of societies. Cultivation of challenging or “marginal” land generally involves the physical alteration of the environment by felling trees removing superfluous materials, such as rocks, creating lynches and terraces, transferring water, and in some cases, creating and transporting soil and manuring. Hillside farming comprises arable and pastoral production systems that often work in tandem. Through the study of hillside agriculture and its landscape transformation, we aim to build narratives assessing agricultural systems’ development and sustainability.

The diachronic study of these socioecological trajectories involves traditional environmental and dating techniques, such as pedology, geochemistry, soil micromorphology, pollen and phytoliths, and radiocarbon dating, but also potentially new methods such as sedaDNA, biomarkers (e.g., faecal stanols, bile acids, waxes...) and direct dating of sediments (for example, luminescence methods). The development of these techniques is archaeologically essential even though they are all subject to similar taphonomic issues such as bioturbation (vegetable and animal), leaching and tillage-perturbation. However, when found in complex topography, geomorphology dictates that archives in the form of cumulative soils are likely to exist on colluvial slopes and in buried or mixed soil horizons. In this session, we invite contributions dealing with modern approaches to the study of landscape improvement and the creation of sustainable agricultural systems. Contributions from around the world are welcome.

ABSTRACTS

1 EXPANDING HORIZONS: NEW UNDERSTANDINGS SOILS AND THEIR INVESTIGATION

Abstract author(s): Doonan, Roger (Archaeological Research Services Ltd)

Abstract format: Oral

Soil is the most common material encountered on any archaeological site yet is, arguably, the most complex substance that an archaeologist ever encounters. Despite this complexity, or perhaps because of it, soil is often overlooked as it makes its way to the spoil heap. This paper argues that the spoil heap is a dismal resting place for archaeological soils especially in light of the significant cumulative investment that past communities have made in soil through activities such as terracing, manuring, and tilling. In terms of effort, energy, and extent, soils are likely our species greatest cultural inheritance.

Numerous systems for the classification of soil exist, yet it defies simple classificatory schemes by being at once cultural and natural and straddling physical, chemical, mineralogical, biological and ecological systems while also transcending time in being simultaneously both contemporary and historic. This far-ranging character of soil makes it a challenge to investigate and while there is an ever increasing arsenal of techniques available to the archaeologist there is a vital need to critically appraise the way we think about soil.

In this paper, some recent developments in method and techniques of soil investigation are reviewed, from capturing physical changes in terraced systems and quantifying energy inputs to considering hitherto unrecognised chemical signatures and activities in agricultural landscapes. It is argued that while the expanding toolbox for soil investigation should be welcomed it is essential that we continue to challenge our understanding of what we think soil is and how it works.

2 CARBON STABLE ISOTOPES AND RADIOCARBON IN CHARRED BOTANICAL REMAINS TO RECONSTRUCT HIGH RESOLUTION PALAEOCLIMATE REFLECTING ENVIRONMENTAL CONDITIONS IN SOUTHERN LEVANT

Abstract author(s): Boaretto, Elisabetta - Regev, Lior - Mintz, Eugenia - Ehrlich, Yael - Raj, Harsh - Caracuta, Valentina (Weizmann Institute of Science)

Abstract format: Oral

Charred wood and olive pits are frequently preserved in archaeological sites in Israel, from the past few thousand years. If dated by radiocarbon, these botanical remains represent an information archive of the past climate conditions represented by the stable carbon isotopes ($\delta^{13}\text{C}$) ratio. In particular olive pits provide multiple advantages as a proxy, allowing for higher resolution of climate reconstruction, both spatially and temporally, reflecting the environment in which the olive trees were growing, and humans were living. An analysis of modern trees and olive pits was performed to assess the reliability of these proxy to reconstruct the climate and for example to connect the $\delta^{13}\text{C}$ and aridity index. Specifically, threshold $\Delta^{13}\text{C}$ for olive trees under severe drought stress was identified. We have also verified with radiocarbon dating of single tree rings along the radiocarbon bomb peak the annual growth of tree rings and the possibility of several consecutive missing rings. Integrating carbon stable isotopes ratio as the stable isotopes as $\Delta^{13}\text{C}$ and radiocarbon dating of each archaeological sample, we reconstruct the climate conditions for the past few thousand years in Israel identifying arid and wet periods synchronized with cultural and social changes.

3 REE TRACKING ANTHROPOGENIC ACTIVITIES AT THE NEOLITHIC STRATIGRAPHIC SEQUENCE OF COVA DE LES CENDRES

Abstract author(s): Gallelo, Gianni - García-Puchol, Oretó (University of Valencia) - Pardo-Gordó, Salvador (University of La Laguna) - Bernabeu, Joan (University of Valencia)

Abstract format: Oral

Rare Earth Elements (REE) due to their particular characteristics have been employed to different anthropogenic soils, demonstrating that this is an effective tool to understand the contribution of human activity in archaeological stratigraphic sequences, pushing forward the current limitations of traditional chemical and sedimentology techniques. This study shows the first application of REE concentrations in Cova de Les Cendres archaeological site. The site displays one of the few complete sequences from the earliest moments of the Neolithic to the beginning of the Bronze Age in the western Mediterranean region. The sequence presents a series of levels interpreted as corral fires resulting from the stabling of ovicaprids. The bottom of the section covers the Neolithic sequence, between c. 5500-5000 cal BC interpreted as a multifunctional settlement, where, together with livestock farming, there is also an important presence of agricultural activities and use of marine resources. REE concentrations, calculated ratios and anomalies, provide significant details regarding human activities and the post-depositional processes. Finally, to reinforce our hypotheses we cross-referenced our results with sedimentological, archaeobotanical, and zooarchaeological data and the archaeological record. Data were analysed using multivariate statistics. The results present a new picture of the anthropogenic contribution to the development of the strata in the cave profile.

4 METHODS FOR IDENTIFYING THE REMAINS OF WILD AND DOMESTICATED PLANT SPECIES

Abstract author(s): Andreu Diez, Oriol (Universitat de Barcelona - UB) - Pellicer, Jaume (Institut Botànic de Barcelona - IBB, CSIC-Ajuntament de Barcelona) - Boaretto, Elisabetta (Weizmann Institute of Science - WIS) - Albert, Rosa María (ICREA - Catalan Institution for Research and Advanced Studies; Universitat Autònoma de Barcelona - UAB)

Abstract format: Oral

The domestication of plants and the development and expansion of agriculture, through the construction of terraces, were pivotal moments in the history of humanity. In this regard, phytoliths may be crucial in distinguishing ancient crops from their wild ancestors and from other wild grasses. Nevertheless, despite all the advances in recent years in the taxonomic identification of cereal phytoliths, mainly through morphometric analyses, there are still some limitations that hinder their ability to identify past crops. Polyploidy events are frequent in plants, and in the case of cereals such as wheat, these events have been decisive due to its adaptive potential to different environments. For instance, prior studies show that an increase of the ploidy level in *Triticum* sp. affects phytolith production in the papilla cells. Our goal is to enhance the taxonomic identification of cereals by investigating how the genetic imprint and human influence on domestication processes affect phytolith formation. To do this, we investigated the influence of ploidy level in the morphology of siliceous phytoliths, by developing a novel technology that uses flow cytometry to estimate the genome and karyotyping. We incorporated several varieties of wheat from *Triticum* sp. (*T. monococcum*, *T. diccoides*, *T. dicoccum*, *T. durum*, and *T. aestivum*) and barley (*Hordeum vulgare*), including their known wild ancestors (*Aegilops speltoides* & *Hordeum spontaneum*), to our current reference collection in order to study the genealogy and the

polyploidization history of wheat and the domestication process in barley. We believe that the research will enhance our ability to identify cereals at archaeological sites, including cereal cultivation on agricultural terraces.

5 MICROARCHAEOLOGICAL STUDIES AS A TOOL TO EXAMINE THE USE OF ANCIENT AGRICULTURAL SYSTEMS

Abstract author(s): Albert, Rosa Maria (Autonomous University of Barcelona; ICREA - Catalan Institution for Research and Advanced Studies) - Alonso-Eguiluz, Monica (Multidisciplinary Archaeological Research Institute - MARI, Vrije Universiteit Brussel)

Abstract format: Oral

The integration of various microarchaeological approaches including phytoliths, ash pseudomorphs, fecal spherulites, aqueous microremains such as diatoms and sponge spicules, and FTIR, has significant advantages for both archaeological and paleoenvironmental research. Their study can teach us about past human activities such as farming and grazing strategies, pre and post-depositional sedimentary processes, and the availability and conditions of the water. In this talk, we will give a few examples of how this integrated strategy of multi-analytical applications has helped to considerably increase our understanding of the landscape, paleoenvironmental conditions, and agriculture and grazing practices in hillsides and terraces of various archaeological contexts and from various geographical locations. Examples will include works in various settings from South America and the Levant, where the application of these studies on hillsides and terraces is being implemented more frequently. We'll also provide examples from the research that we did in Europe within the frame of the Terrace project (i.e. Sicily, Norway, UK, etc.). The major goal is to assess the feasibility of this multi-analytical approach throughout Europe while taking into account the study sites' geographic location, their environmental conditions, and any postdepositional processes that might have an impact on the preservation of these microremains.

6 SEARCHING FOR CROPS. APPLICATIONS OF HIGH-RESOLUTION MICROARCHAEOLOGICAL TECHNIQUES TO EUROPEAN AGRICULTURAL TERRACES

Abstract author(s): Alonso-Eguiluz, Mónica (Multidisciplinary Archaeological Research Institute-Vrije Universiteit Brussel) - Albert, Rosa María (ICREA Research Professor; Autonomous University of Barcelona)

Abstract format: Oral

Agricultural terraces are ubiquitous in the European landscape. Their construction and use span several chronological periods, with their first record dating back to the Neolithic. In addition to their impact on the landscape and on the environment, the ability to enlarge crop production areas by building terraces allowed for an improvement in crop quality, yield, and variety, which helped to boost societal complexity and demographics. To better understand these processes, the TerrACE project has developed a high-resolution research protocol to be applied in agricultural terraces systems from Europe, with no chronological distinction. This multi-scale analytical research includes, among others, the analysis of biogenic microremains to identify past cultivars.

We present here the results obtained from the analyses of various microremains including phytoliths, ash pseudomorphs, fecal spherulites, aqueous siliceous microremains (diatoms and sponge spicules), and Fourier Transformed Infrared Analyses (FTIR) from different agricultural terraces across Europe. Four of them are located in UK (Plantation Camp, Blick Mead, Gueswick and Charlton Forest), four in Norway (Bjorskin, Homlong, Skotek and Smoge, Norway), and five in southern Europe (Soave, Castronovo (Italy), and Anavlochos, Panormos and Bouzi (Greece)). Phytoliths were abundantly identified in northern European sites, with Blick Mead being the only site where no microremains were recovered. The C3 Pooid subfamily predominated at those locations where phytoliths were identified. Furthermore, the results point to barley as being cultivated at Plantation Camp. In addition to phytoliths, diatoms were identified in large numbers in the Norwegian sites. Spherulites and ash pseudomorphs, on the other hand, were not found in any of these sites. In contrast, only Castronovo exhibits phytoliths in the southern European sites. Along with phytoliths, spherulites and ash pseudomorphs were present at this site. The microremains of Castronovo all seemed to have experienced combustion processes.

7 THE GEOARCHAEOLOGY OF A BRONZE AGE AEGEAN ENGINEERED AGRICULTURAL LANDSCAPE AT CHOIROMANDRES, EASTERN CRETE

Abstract author(s): Fallu, Daniel (Arctic University Museum of Norway) - Vokotopoulos, Leonidas ("Minoan Roads" Research Project)

Abstract format: Oral

With the rise of societal complexity in the Aegean region came an intensification of agriculture and a necessary elaboration of agricultural technologies. Agricultural terraces appear to be a significant part of this agricultural toolkit, appearing to increase significantly in use between 2000 and 1500 BCE in association with palatial centers on the

mainland and in Crete. The ERC-funded project Terrace Archaeology and Culture in Europe (TerrACE) has developed a new toolkit for examining these important landscape archives, including mapping via high-resolution photogrammetry, radiocarbon and optically stimulated luminescence dating, geochemistry, soil micromorphology, phytolith analysis and environmental DNA. In particular, the combination of pOSL and pXRF allows for the high-resolution stratigraphic control necessary for reconstructing terrace construction and use.

The site of Choiromandres in the vicinity of the palace of Zakros on the East Coast of Crete presents a unique opportunity to examine the elaboration of terracing during Minoan palatial administration. The site, a series of terraces surrounded by an enclosure wall and with an associated series of water reservoirs, appears to date some time shortly after the eruption of Thera. Optically-Stimulated luminescence and Radiocarbon dating from terrestrial snail shells were used to better understand the timing of early terrace construction on the site. Comparison between portable luminescence curves, pottery chronology, and chemostratigraphy, allow for the reconstruction of changes to the landscape over time. The geochemistry and relative luminescence curves show both the initial check-dam like accumulation of sediments as well as later addition of soil material for cultivation. Phosphorus levels indicate possible manuring. The unique geo-engineering of the Choiromandres valley by the Minoans will be placed in its appropriate environmental context, examining the climate in the aftermath of the Thera eruption as well as the development of agricultural terracing across Bronze Age Europe.

8 INVESTIGATING THE ALPINE TERRACED LANDSCAPE AROUND THE BRONZE AND IRON AGE SETTLEMENT OF RAMOSCH-MOTTATA (GRISONS, CH)

Abstract author(s): Della Casa, Philippe (University of Zurich) - Abderhalden, Angelika (Fundaziun Pro Terra Engiadina) - Lambers, Karsten (University of Leiden) - Kothieringer, Katja (University of Bamberg) - Maechtle, Bertil (University of Heidelberg) - Roepke, Astrid (University of Cologne) - Ranzinger, Mario (University of Heidelberg alumnus)

Abstract format: Oral

The Bronze and Iron age settlement of Ramosch-Mottata is located on an elevated ridge at 1517 m a.s.l. within the terraced landscape of the Lower Engadine in Switzerland. Reconstructing the settlement and the surrounding activities is an essential path towards understanding the origin and development of the highly specialised vertical economic system in the Alps and its socio-economic implications. Since the 1980s-90s, a prehistoric onset of agricultural practices was postulated in the vicinity of the settlement by pollen and pedological analyses. Using an interdisciplinary approach, including geophysical prospection, (geo-)archaeological survey and soundings, followed by micromorphological, archaeobotanical, and geochemical analyses as well as different dating methods in the catchment area, different situations have been chosen for new analyses. At Chantata (1636 m a.s.l.), a prehistoric terrace with stone construction could be evidenced with combined methods. Different phases of use from the Bronze to the Iron age are documented by (geo)archaeological investigations, including a former tillage horizon evidenced by micromorphological features. The extension of the terrace was estimated by ERT and soil coring. The second site of focus is the potential area of a source with irrigation channels, directly beneath the prehistoric hilltop settlement. As access to water must have been of importance for the settlement and the domestic animals related to it, an excavation was carried out in order to analyse the sediment sequence. Interestingly, the use of this place already starts in the late Neolithic, and continues throughout the occupation periods of the settlement. For a more detailed picture, radiocarbon dating was applied on a series of materials including charcoal, pollen, and charred cereal remains (probably from domestic refuse). This new research allows for a much more detailed discussion of prehistoric agro-pastoral techniques and evolutions in inner-alpine valleys.

9 KNOWLEDGE TRANSFER AND THE TERRACE CULTURE OF JERUSALEM'S HIGHLANDS BETWEEN THE IRON AGE AND THE LATE ISLAMIC PERIODS

Abstract author(s): Gadot, Yuval (Tel-Aviv University)

Abstract format: Oral

Terraces attracted the attention of scholars from a range of disciplines covering geomorphological and hydrological processes, ecological modelling and human-environment interplay, as well as human subsistence strategies and social history. Studies conducted in the highlands of the southern Levant have shown that the construction of terrace walls for dry farming began during the Hellenistic period and that most of the walls seen today built along the slopes are dating to the last 700 years, periods during which the southern Levant was under the Mamluk and Ottoman empires.

This paper will debate the motivation behind terrace constructions during these 700 years. Building on over 150 dated soil samples from different parts of the highlands of Jerusalem, collected and published by a number of research teams, we will first present a long range view of terrace construction events in light of historically known land management reforms.

In the second part of the lecture we will present a high resolution study of terrace construction along Ein kerem river, a short tributary of the Soreq river. By examining the spatial stratigraphy and absolute chronology of terrace walls and plot fencing as well as documents related to land endowments, we will try and tie between construction of terraces and land ownership mechanism and exploitation strategies.

10 TRACING LOESSIC SEDIMENTS AND A HISTORY OF COLLUVIATION AND LAND USE ACROSS A CHALKLAND LYNCHET SYSTEM OF EASTERN BELGIUM

Abstract author(s): Pears, Ben (University of Southampton) - Lang, Andreas (University of Salzburg) - Fallu, Dan (Tromsø Museum, UiT) - Van Oost, Kristof - Zhao, Pengzhi (UCLouvain) - Tarolli, Paolo - Cucchiari, Sara (University of Udine) - Walsh, Kevin (University of York) - Brown, Tony (University of Southampton; Tromsø Museum, UiT)

Abstract format: Oral

Readily identifiable and distinctive loess (windblown) deposits cover large areas of central mainland Europe including Belgium. In many cases these sediments have been mapped across chalkland landscapes and due to their particular textural and mineralogical characteristics (well drained and fertile) have been intensively cultivated in the past. This has led to major tillage-driven colluviation and sediment storage within terrace and lynchet features. This paper presents detailed geoarchaeological results from a substantial chalkland lynchet system at Sint Marten-Voeren in the Limburg Province of eastern Belgium.

Analysis of both in situ and reworked loess from a hillside transect using a range of analytical techniques particularly pXRF, alongside a detailed Optically Stimulated Luminescence (OSL) chronology have enabled a robust chronostratigraphy to be determined from hilltop to valley bottom. Results from the research has shown that the elemental signature of loess at the sample site can be traced through the assessment transect and has illustrated a complex history of cultivation and colluviation from the Iron Age to present day, with particularly extensive sediment transfer in the early medieval and medieval periods associated with a major expansion of agriculture including hop cultivation.

11 COMBINING METHODS TO UNDERSTAND PRE-HISPANIC AGRICULTURE IN TERRACES LANDSCAPES OF THE VALLEY OF SONDONDO, PERU

Abstract author(s): Aparicio, Patricia (Pontificia Universidad Católica del Perú; Universidad de Oviedo) - Korstanje, Alejandra (Instituto de Arqueología y Museo. Laboratorio de Arqueobotánica. Universidad Nacional de Tucuman; Instituto Superior de Estudios Sociales - CONICET/UNT) - Taddei Salas, María (Instituto Superior de Estudios Sociales - CONICET/UNT; Universidad Nacional de Tucuman) - Fernández Mier, Margarita (Universidad de Oviedo)

Abstract format: Oral

Terraces are the most evidence of landscape transformation in the highland of the South-Central Andes of Peru; they represent a magnificent and complex solution to create cultivation areas where geographical and climatic conditions were not ideal. Despite their relevance to studying different aspects of complex societies in pre-Hispanic times, terraces were either ignored or just considered a complementary topic in scholar's research.

Our team focuses on the study of the agrarian landscape and pre-Hispanic agriculture, excavating terraces at different sea levels in the valley of Sondondo, Peru. Moreover, we have excavated in other complementary areas as storages and livestock corrals to understand the complex assembly at the agrarian systems from the Early Intermediate Period until Inca times in the area.

In this contribution, we will present the archaeobotanical technique employed in our research: the multiple analysis of microfossils in soil. This method combines geoarchaeology with the study of micro remains such as phytoliths, starches, diatoms, etc. In summary, this analysis has provided further knowledge of the types of crops cultivated, allowing the identification of farming changes, which are also linked with dating results. Moreover, our technique determines several strategies to improve agricultural work. The results of our analyses demonstrate that traditional interpretations require revision, especially those hypotheses on the cultivation of maize.

12 LANDESQUE CAPITAL AND PRE-COLUMBIAN TERRACING TECHNOLOGY IN CONTRASTING CONTEXTS: THE HIGH ANDEAN PLATEAU AND THE EASTERN FORESTS OF NW ARGENTINA

Abstract author(s): Zuccarelli Freire, Veronica - Roberts, Patrick (Max Planck Institut für Geoantropology) - Pey, Maria Laura - Vaquer, José María (CONICET-Instituto de Arqueología FFyL, Universidad de Buenos Aires)

Abstract format: Oral

Landscape archaeology investigations in the past decades have revealed that even environments commonly considered 'extreme', such as the Neotropical forests or desertic regions, far from being pristine, were extensively transformed by past human societies with repercussions for their biodiversity and soil morphology that persist to this day (Piperno & Pearsall 1998, Erickson 2006, Arroyo Kalin 2016). In fact, agricultural

soils are some of the largest artifacts created by human populations. Specific and transgenerational activities aimed at promoting soil fertility - e.g. use of organic fertilizers, burning, the use of agricultural terraces. Particularly terracing is a well-known landscape modification that expanded in the Andes since ca. 1500 BCE to improve soils for cultivation and to manage seasonally scarce water. We aim to discuss how this technology allowed pre-Columbian peasants inhabiting diverse biomes-the high arid Andean plateau and Eastern forests of NW Argentina- to adapt to changing environmental conditions. This approach includes geoarchaeology, archaeobotanical and isotope analyses in soils, and spatial modeling to address two contrasting cases in the Andean and circum-Andean region of NW Argentina: Cusi Cusi (Jujuy, Argentina) sites dated between 1200 CE to post-colonial times; and El Alto-Ancasti mountain range (Catamarca, Argentina) sites, dated between 500-1000 CE.

13 **FIELD EVIDENCE AND GEOARCHAEOLOGICAL INVESTIGATIONS OF TERRACES IN VERNAZZA CATCHMENT, CINQUE TERRE (LIGURIA, NORTH ITALY): FROM MULTIPLE USES TO ABANDONMENT**

Abstract author(s): Ghislandi, Sabina - Rellini, Ivano (Università di Genova - DISTAV, Dipartimento di Scienze della Terra, dell'Ambiente e della Vita) - Panetta, Alessandro - Piu, Caterina - Menéndez Blanco, Andrés - Stagno, Anna (Università di Genova - DAFIST, Dipartimento di Antichità, Filosofia, Storia, Geografia)

Abstract format: Oral

This paper focuses on the research performed on terraced landscape of Liguria (North Italy) by the Italian team of IRIS project. The whole region has been subjected to intense agricultural exploitation leading to the construction of hundreds of kilometers of peculiar dry-stone walls. Cinque Terre is one of the most impressive examples and here we illustrate the results from a multidisciplinary study of this specific area.

Terraces provide stable topographic base for crops and favour soil moisture conservation in the crop root zone. Since the XV century, these rural terraces have represented great importance for the landscape, covering high portion of coastal slopes. However, the progressive abandonment of the rural activity since the last century is causing an important deterioration of the terraces and action is called for environmental and social reasons.

We present the case study of the terraced vineyard of the catchment of Vernazza (La Spezia), investigated through pedological and soil micromorphological approaches. The results showed a complex soil profile with buried horizons, where the pedogenesis was influenced by ancient management history alternated to phases of abandonment and consequent slope instability. This study included the observation of the historic traces related to the cultivation and transhumance, offering the basis for the improvement of a sustainable agricultural production and enhancement of the vineyards in this area.

The international IRIS project is taking a novel and interdisciplinary approach to advance the socially and environmentally sustainable conservation, protection and use of upland landscapes in Europe. The JPI Cultural Heritage project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N. 699523.

A. **TIMING THE USAGE OF AGRICULTURAL SPACE: OPTICAL DATING OF AGRICULTURAL TERRACE DEPOSITS**

Abstract author(s): Lang, Andreas - Snape, Lisa - Bahl, Chiara - Mauz, Barbara - Brown, Tony (Natural Sciences, Tromsø University Museum, UiT)

Abstract format: Poster

Agricultural terraces are common features of cultivated hillsides across the world and have recently attracted increasing attention as archives of land-use practices. Such terraces originate from various soil translocation processes and throughout usage are subject of frequent reworking. Establishing chronologies for agricultural terraces usage is, thus, notoriously difficult. Here, we report results from optically-stimulated luminescence dating of terrace sediments that (i) originate from a wide range of locations across Europe stretching from the Polar circle to the Mediterranean; (ii) are derived from various host lithologies including igneous rocks, Triassic sedimentary rocks, Neogene marine deposits, and Pleistocene glacial and periglacial sediments; (iii) represent a range of cultivation styles including labour intensive manual techniques as well as mechanised tillage; and, (iv) cover a wide span of time periods from the Early Bronze Age through to modern times. Reliable chronologies of optical ages, consistent internally

and in agreement with independent age information, were established on silt-sized quartz extracts from loess derived terrace deposits and on sand-sized quartz grains derived mostly from

sedimentary host rocks. OSL signals of quartz extracted from deposits with igneous and turbiditic host rocks are often not of sufficient quality for optical dating purposes.

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Biittner, Katie (MacEwan University) - Smith Nicholls, Florence (Queen Mary University of London; iGGi) - Aycocock, John (University of Calgary)

Session format: Regular session

While formal scholarship on the archaeology in and of video/digital games has increased in the last decade, archaeogaming remains in a liminal space within academic discourse. While similar topics are investigated and methodological challenges are shared, archaeogaming is neither digital archaeology nor is it media archaeology. Archaeogaming is also not simply the study of digital artefacts but a developing community of scholarship that interrogates the materiality and intangibility of contemporary culture. Further, archaeogaming is not “archaeology plus computer science” but a field of research with its own developing but distinct praxis. As such we are defining archaeogaming as not interdisciplinary research but rather as the transdisciplinary field of inquiry into the digital games we play and the technologies and cultures that shape them. By situating archaeogaming as transdisciplinary, we are acknowledging the challenge of finding a place for archaeogaming in the various disciplines that engage in it but also the increasing necessity for “archaeogamers” to have diverse inter- and intra-disciplinary training and perspectives in their work.

The aims of this session are threefold. First, the session will illustrate the various approaches for the study of digital games. Second, we aim to address some of the successes and challenges in undertaking contemporary archaeologies that push the boundary of traditional archaeological practice. Finally, community-building: we want to foster a dialogue between archaeogamers who represent not just archaeology but other disciplines such as computer science, engineering, and media studies. As such, we are inviting papers that examine the methodological and theoretical practices used in archaeogaming today and which represent the multidimensionality and transdisciplinary nature of this work. Case studies that address methodological and theoretical aspects are also welcome.

ABSTRACTS

1 AZTEC PIXELS PICKAXED: TRANSCENDING EXTRACTIVE ETHNO-GRAPHICS AND ARCHAEO-AFFORDANCES IN DIGITAL MESOAMERICA

Abstract author(s): Fitzgerald, Joshua (Churchill College, University of Cambridge; McDonald Institute of Archaeological Research)

Abstract format: Oral

Today’s digital gaming controllers and keyboard-and-mouse combos, more often than not, participate in archaeology with as much care as that afforded to the subsequent swings of an indelicate pickaxe as it might have once crashed down in and pulled back up some ancient object or bit of bones from Mexican soil. If a player’s tools for play are only dull-headed and tactless artifacts of colonialism—though rasterized with millions of stimulating pixels—how might gamers still find value in the discipline of archaeology or another’s cultural heritage? The proposed paper answers this question by explicating the history of archaeogaming’s entanglements in Mexican archaeology. I target game developers’ dalliances in Classic and Postclassic Mesoamerican, from ancient Teotihuacan to sixteenth-century Tenochtitlan, to expose gamer culture’s successes and failures since the 1980s. This includes examples drawn from educational games recently used in U.S. and U.K. primary and secondary schools (Excavate! Mesoamerica DiG-iT!, 2017; BrainPOP, 1999–present), however, my focus is on popular commercial games and developers, exploring archaeogaming aspects, such as site surveys, structural analysis and reconstructions, object study, and related ethnographic material use. In this, I include a variety of the industry’s approaches (i.e., Aztec, 1982; Age of Empires II, 1999–2022; Theocracy, 2000; Age of Empires III, 2005–2020; and Yaopan, 2021) and apply affordance and signification theory to reveal ways in which game developers shape experiences and teach players about archaeology (Gibson, 1974; Norman, 2013). Aiming for more than a critique, my goal is to encourage archaeologists to become more entwined in decolonial methods in their game interventions. I argue that critical engagement with Indigenous epistemologies coupled with advanced archaeology will best equip the discipline’s adoption of more games in our classrooms and laboratories. Instead of simply replacing a pickaxe swing with pixels in our toolset, gamers require culturally-responsive archaeogaming.

2 “ARCHAEOLOGY – HISTORY UNCOVERED”. CASE STUDY: THE IRON-AGE-DANUBE ELEARNING APP

Abstract author(s): Hellmuth Kramberger, Anja (University of Ljubljana; Alma Mater Europaea – Institutum Studiorum Humanitatis) - Mele, Marko (Universalmuseum Joanneum GmbH)

Abstract format: Oral

So you're an archaeologist, how interesting! How about the dinosaurs and the pyramids?" A sentence that probably every archaeologist has heard in this or a similar way. However, the reality of the most archaeologists is rarely shaped by spectacular finds and adventures, as they are mostly represented in the media, especially in movies and television shows. Within the framework of the Interreg Danube Transnational project "Monumentalized Early Iron Age Landscapes in the Danube River Basin" (Iron-Age-Danube) we developed an eLearning App to guide the user in a playful way through all stages of archaeological work. Thus, starting with all necessary preparation for the excavation project and the writing of applications, to the use of different prospecting methods, the actual work on the archaeological excavation, the processing of the findings and their final archiving, presentation in the museum or in a publication. The user of the App is accompanied on his journey through the different phases of archaeological work by two characters, the archaeologist and his mascot „Tomi“. In the learning mode, the user can explore these different work phases in several consecutive scenes by interacting with objects and thus receiving specific information about them. In game mode, the user is asked questions and has to try to select the right objects.

3 WORLD HERITAGE SITE AS AN AR PLAYGROUND: CASE SUOMENLINNA

Abstract author(s): Rynnänen, Anne (University of Oulu)

Abstract format: Oral

Augmented Reality (AR) has grown from a novel technology into a concept that is familiar especially through mobile applications. One such mobile application, made into a game, can be found in a world heritage site in Helsinki, Suomenlinna Sea Fortress (building started in 1748). The site-specific game guides its users through places within Suomenlinna using GPS, AR and a story that touches on different time periods of the Sea Fortress. AR is used at three different locations in the game.

It can be argued that the nature of places AR is used in changes, as there is a new element into the way a place is constructed and how it is experienced. Suomenlinna case study approaches this argument with a question: how does AR impact the experience of place for the user when they move from one location to another? This is studied by observing research participants' behavior as they play the game by moving within Suomenlinna. In addition, the participants are interviewed on their experience after they have played the game.

The analysis places particular interest into the movement of the players within Suomenlinna as guided by the game, how they experienced navigating with the game and how (if at all) the three AR points impacted their experience of the Sea Fortress.

The study forms one part of a doctoral thesis that focuses on the impact of AR on the meaning of place in cultural heritage sites. This is a continuation to the multimodal approach Rynnänen (MA, MSc in Business) has applied throughout her studies, including her first master's thesis on the impact of location-based mobile advertisement on the meaning of place. Her multidisciplinary approach has since been refined by working in the game industry for seven years. The Suomenlinna game was done in collaboration with her then employer.

4 ATTACKING THE ANCIENT: TRANSDISCIPLINARY ETHICS IN ARCHAEOGAMING

Abstract author(s): MacLeod, Alexander (MacEwan University)

Abstract format: Oral

The act of modifying video games and the culture surrounding the modding community present uniquely modern ethical dilemmas for archaeologists regarding ownership. In this paper, I investigate the ethical concerns presented by the case of Defense of the Ancients (DotA), a custom game mode for the game Warcraft III: Reign of Chaos. This popular mod has significantly influenced video game culture and design. By looking at the contributions to game culture made by modders and the surrounding modding community, we look at how mods contribute to games through accessibility, additional content, entertainment, and cultural interactions. Using DotA, I look at how major archaeological associations' codes of ethics cannot keep up with the expectations and needs of Archaeogaming and cannot accommodate the intricacies of a transdisciplinary field. Ownership claims are challenging to navigate due to legal definitions of authorship, copyright, and recurring legal disputes regarding intellectual property. As a research site, DotA is influenced by these ethical issues without an obvious path forward and no previous precedence relevant to the site. To accommodate a clear and progressive path forward, ethical interpretations of the past must be redefined to fit the needs of the future in a culture surrounded by digital media.

5 THE LEGACY OF GAME CARTRIDGES: THE FAIRCHILD CHANNEL F & THE GAMING INDUSTRY

Abstract author(s): Russell, Paige (MacEwan University)

Abstract format: Oral

Before CDs, DVDs, and digital downloads there was the game cartridge. In the history of video games, the importance of the game cartridge cannot be understated as the medium allowed for a new industry to take off economically and creatively. To explore this importance, this paper takes a look at the Fairchild Channel F, which is regarded as the first video game console to use interchangeable ROM cartridges. The creation, as well as specifications, of the Fairchild Channel F game cartridges are examined and used to showcase the development of the video game industry.

Using the transdisciplinary nature of Archaeogaming, I hope to highlight how the game cartridge influenced, and continues to influence, the video game industry and the growth of technology. As cultural artefacts, game cartridges are also influenced by these same factors of industry and technology. I also argue for the acknowledgement of game cartridges as important artefacts that can be used to start examining cultural and technological change. There is a necessity for acknowledgement as the video game industry moves onto optical disc and digital formats that are viewed as making cartridges obsolete.

6 PROTOTYPES IN THE ARCHAEOLOGICAL RECORD: RAISING THE CURTAIN WITH ELECTRONIC THEATER

Abstract author(s): Biittner, Katie (MacEwan University) - Aycocock, John (University of Calgary) - Therrien, Carl (Université de Montréal)

Abstract format: Oral

Prototypes are simply tests of ideas but they are not simple in terms of what they can reveal about a technology. Archaeology has developed several frameworks for understanding technologies; the framework applied here is the chaîne opératoire, which traces the acquisition then transformation of raw materials into various forms. While prototypes are rarely explicitly addressed in archaeological studies, their analysis can illustrate the complexities of the technological choices made by authors and agents in the chaîne opératoire. Further, prototypes occupy a unique, liminal space in technological organization – they are a useful object (a material proof of concept), yet are intentionally created to be discarded. We make this more concrete through a close look at Electronic Theater, a prototype, unreleased Commodore 64 game developed by Dona Bailey and Paul Allen Newell for Activision in 1984-5.

Electronic Theater is an early entry into what contemporary gaming culture calls the “visual novel” genre. This fuzzy genre, which still eludes clear-cut definition, often proposes flexibility to their players in terms of ludic engagement: one can explore branching narratives, and some of these titles reward the thorough exploration of the structure with a “real” ending. The flexible nature of this engagement is at odds with some of the common defining elements of games and this borderline status means that it has often been neglected in historical investigations.

We show Electronic Theater through the lenses of archaeology, game history, and computer science, drawing on developer interviews, source code, and a running version of the game.

7 ACCURACY, NOT AUTHENTICITY: HOW ASSASSIN'S CREED ODYSSEY LEVERAGES ARCHAEOLOGY FOR RESONANCE

Abstract author(s): Zanesco, Andrei (Concordia University)

Abstract format: Oral

Over the past sixteen years, Ubisoft's Assassin's Creed (2007-2023) series has grown to encompass a staggering host of historic and geographic locales. From the crusade-era Jerusalem (2007) to the Republic of Pirates (2013), and recently even Ptolemaic Egypt (2017) and classical Greece (2018). In parallel, numerous disciplines have matched releases in the franchise with critiques of cultural representation (El-Nasr et al. 2008; Magra 2021), colonialism (Shaw 2015; Murray 2017; Mukherjee 2017) and spatial reconstruction (Atkinson 2017; Westin & Hedlund 2016). In particular, titles set in antiquity have elicited responses from archaeologists interested in the potentials and limitations of the franchise for developing new archaeological models and understanding remote societies (Casey 2018; Bondioli et al. 2019; Arbuckle-Macleod 2021).

However, much of the research emerging has focused on the game as an archaeological model, as opposed to the use of archaeological model for legitimizing or masking broader colonial impulses (Politopoulos et al. 2019). This presentation argues that Assassin's Creed Odyssey (2018), in particular, elides notions of archaeological nationalism, problematic realities and favors blockbuster (Acland 2020) engagements with the space. In other words, Odyssey relies on archaeological accuracy to legitimate a version of classical Greece that conforms to present day sensibilities, upholding an articulated form of resonance (Apperley 2010; Chapman 2016; Guesdon 2018).

The research presented here uses a 150-hour study of *Odyssey* using game studies methods (Fernández-Vara 2015; Consavo and Dutton 2006; Bogost 2006, 2007) that dovetail sporadically with Andrew Reinhard's theorization of archaeogaming (2018). Concretely, this case study presents a systematic view of how Greece is constructed to favor accurate-seeming environments, audio, narrative, and historic elements that are actually closer to tropes drawn from legacy media. Ultimately, *Odyssey* is discussed as a hyperreal representation of Greek stereotypes. (Eco 1986).

A. PLEASE DON'T ATTACK ME, I'M JUST AN ARCHAEOGAMER: SURVEYING ASSASSINS CREED VALHALLA

Abstract author(s): Bureau, Alexis (Grant MacEwan University)

Abstract format: Poster

Assassins Creed Valhalla is an open-world story-based video game that balances historical science fiction with accurate Viking culture and history. This balance allows players to experience Viking culture personally as they complete the game. Through archaeogaming methods, I surveyed the site of Saint Albanes Abbey in *Assassins Creed Valhalla*. For surveying, I used an in-game function based on a flying raven's perspective. By doing this, the camera perspective switches to an aerial perspective that mimics how the raven would view the landscape as it was flying. This feature aids in both imagery and placing waypoints on the landscape without using the in-game map function. Waypoints are markers placed using the map or raven function to guide the player to the desired location marked while displaying the distance in meters. Using meters as an in-game unit makes it easier for archaeogamers to complete a digital survey of the area and buildings within Saint Albanes. Digital surveying exposes both archaeologists and players to interactions with material culture. This creates a personal, historical, and scientific perspective on Viking culture by creating new interpretations of artifacts and experiences through digital media. However, the challenges of ethical digital surveying are presently based on the game's narrative design. In *Assassins Creed Valhalla*, it is possible to complete an ethical digital survey of Saint Albanes Abbey. Despite the difficulty of placing markers while controlling the raven and the inconsistency within the surveying. It is possible to create an accurate survey with accurate distances using an error range of approximately 5 meters. Additionally, with the limitations included, size and villager interactions showcase the need for modding adjustments, and more archaeogamers to survey the site are essential for future work.

30 POLYCHROMY IN PRACTICE: CASTING COLOUR ONTO ROMAN ARTWORKS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Campbell, Louisa (University of Glasgow) - Kremer, Gabrielle (Austrian Archaeological Institute)

Session format: Regular session

Recent interdisciplinary innovation in the fields of materials science and digital heritage have had a transformative impact on our understanding of how artworks, architecture and artefacts were presented to Roman audiences and the way contemporary audiences can engage with them in the museumscape and digital arena. Polychromy is pivotal to this interface since colour is a central component of the lived experience that creates connections between people, places and things. Yet, colour is often under-represented in archaeological reports and barely acknowledged on information boards in exhibition spaces.

Non-invasive technologies, including pXRF, Raman Spectroscopy, multispectral imaging and microphotography, permit the rapid in situ analysis of curated Classical sculptures and precious frescoes to fingerprint original surface treatments and pigments. Where appropriate, laboratory-based analytical techniques, including SEM/EDS, GC-MS, micro-Raman, FTIR-ATR, light microscopy of cross-sections, amongst others, provide a deeper granularity and precision to our interpretations.

This session will explore how new interpretive frameworks and the application of these and other emerging techniques on Roman statuary, sculpted reliefs, inscriptions, artefacts and architectural features have altered their perception and facilitated their authentic reconstruction using cutting-edge digital technologies. We welcome contributions from researchers considering all aspects of polychromy practice in Roman contexts, including those with a focus on frontier contexts where the dynamics between cultural traditions, artistic skills, raw materials and availability of pigments may differ greatly from other provincial settings. Papers may include, but are not restricted to:

- Materials science methodologies in polychromy research;
- The role of colour in Roman visual media;
- Digital reconstruction in research and museums;
- Provincial horizons.

1 NIKA PRASINE - THE COLOURS OF CIRCUS FACTIONS AS MARKERS OF IDENTITY?

Abstract author(s): Grosser, Frederik (Staatliche Museen zu Berlin, Antikensammlung)

Abstract format: Oral

Imperial Rome is often described as a culture of spectacles and chariot races were undoubtedly the greatest spectacle in the Roman Empire. Hence, it is no surprise that images of charioteers and chariot races can be found in nearly every context and in almost every media of the Roman imperial period as well as of Late Antiquity. Such images reflect not only the thrill of the races. Especially the preserved images – mostly mosaics and mural paintings – on which colours can still be traced, reveal also a lot about the organisation of the races and the role of the four circus factions: the Whites, Reds, Blues, and Greens. Belonging to one of those factions was not a triviality but part of a bitter, violent, and sometimes even deadly rivalry. Consequently, the colours of the factions were marks of identification: they constituted, perpetuated, and supported a communication system about belonging, loyalty, affection, antipathy, and rivalry. Images served as the media in this communication process. The presentation therefore aims to investigate how colours of the four circus factions on images of charioteers and chariot races were used in this environment to communicate specific values, ideas, and a sense of belonging.

2 UP-CLOSE: MODELLING THE POLYCHROME-MATERIAL AESTHETICS OF ROMAN MARBLE PORTRAIT BUSTS

Abstract author(s): Abbe, Mark (University of Georgia) - Chappell, Stephen (Independent Digital Artist)

Abstract format: Oral

The marble portrait bust, so patently unfashionable today, possessed a vibrant and immediate charge in Roman antiquity in no small part because of its life-like and artful painting – now absent. Sculpted portrait busts dynamically expanded the more ubiquitous practice of portrait painting on two-dimensional panel into three dimensions, increasing the presence of their individual subjects into the physical space and fluid environmental lighting of the viewer. Their coloration – visually prominent and defining – was readily legible from afar and invited and rewarded close scrutiny. This collaborative paper attempts to experimentally model something of the visual effects of the nuanced coloration and painting on a pair of high-quality marble portrait busts representing Septimius Severus (r. 193-211 CE) and Julia Domna in the Eskenazi Museum of Art (Bloomington, Indiana). Dating from the first decade of the third century and associated with a Roman metropolitan workshop, the remarkably well-preserved pair allows a rare opportunity to closely explore the surface polishing on portrait busts from the high imperial period. Though only a very limited amount of ancient polychromy remains on the pair, other forms of informative portrait painting survive in diverse media, including the contemporary “Berlin Tondo” from Egypt. Our concern, however, is not to attempt to reproduce the precise coloration of the busts in antiquity, but rather to experimentally model something of their aesthetics that married sculpted marble and the art of painting.

3 ‘COLOURS REVEALED’: THE INVESTIGATION OF POLYCHROMY ON ROMAN MONUMENTS FROM THE DANUBIAN PROVINCES

Abstract author(s): Krickl, Robert - Kremer, Gabrielle (Austrian Archaeological Institute / Austrian Academy of Sciences) - Linke, Robert (Bundesdenkmalamt)

Abstract format: Oral

A four-year Heritage Science Austria project of the Austrian Academy of Sciences is dedicated to the study of paint residues on stone monuments from the Roman Danubian provinces Noricum and Pannonia by combining interdisciplinary methods of scientific analysis, documentation and evaluation. The presentation introduces the approach as well as the applied techniques of non- and micro-invasive investigations and gives an overview on the results achieved so far. Selected examples of objects from the Archaeological Museum Carnuntinum and from other collections in the studied area are used to show what information can be gained from the preserved substance and what further research questions can be derived from it. The problems of interpretation are presented and discussed against the background of archaeological-art historical, but also museological aspects. What are the possibilities and limits of methods for identification and localization of pigments on objects in museal display? Which external influences and installation conditions could have been decisive for the state of preservation of the coloured surfaces? Where are the justifiable limits of visualization in the museum environment, given the current state of knowledge, and what questions arise from this for the further research project?

4 STUDIES ON THE POLYCHROMY OF TREVERAN FUNERARY MONUMENTS - FIRST STEPS

Abstract author(s): Kloeckner, Anja - Kelp, Ute (Goethe-University Frankfurt, IAW)

Abstract format: Oral

In terms of their polychromy, Treveran funerary monuments represent one of the most important and best-preserved ensembles of Roman sculpture. Residual paint can still be seen with the naked eye. As early as the 19th century, traces of colour were observed and in some cases meticulously reproduced in drawings. Systematic studies, however, are lacking to date.

Within the frame of our DFG-funded project “Contextualising Treveran Grave Monuments” that started in 2022 (https://www.uni-frankfurt.de/128552583/Trier_Grabdenkmäler_im_Kontext), a pilot study centres on the colour coding and polychromy of these Roman grave monuments. We build on the documentation carried out during our previous projects on these monuments.

We will present first steps in studying the polychromy of Treveran funerary monuments; following the hypothesis that colouring particularly emphasised individual decorative elements, motifs at different places and sides of the monuments are related to each other. Colour creates connections that are not apparent from the sculptural design alone. These aspects can only be evaluated if the colour materials and tones are precisely determined. But scientific analyses of the colour residues on limestone and sandstone monuments for this region and period are still a desideratum. In order to develop scientific standards, we aim to explore the technical possibilities for the reconstruction of the original colours. By choosing one monument, various non-destructive, minimally invasive methods of analysis will be tested to assess the potential for further research. An overview of the colour materials and painting techniques will be used to map the colour texture on a digital 3D-model of the monument. Depending on the density of information obtained, a reconstruction of the original colouring can be considered.

Our analysis of this poorly preserved and still underestimated level in visual representations of Roman time will help to picture the impact these funerary monuments had on their viewers, ancient and modern.

5 COLOURFUL FUNERARY IDEOLOGY IN NORTHERN ETRURIA DURING ROMANIZATION: HELLENISTIC URNS FROM VOLTERRA AND CHIUSI

Abstract author(s): Zubajová, Marína - Ceccarelli, Letizia (Department of Archaeology and Museology, Faculty of Arts, Masaryk University)

Abstract format: Oral

Colours played an important role in Etruscan funerary contexts: we observe this not only on the frescoes in the tombs of Tarquinia, but also on the urns of northern Etruria (late 4th-1st centuries BC). An example are the well-known terracotta urns from Chiusi, literally bursting with colours. However, very little research has been done on the pigments especially those used on stone urns from Volterra and Chiusi. These urns are studied exclusively from the iconography point of view but their „materiality“ or how they were painted have never been studied. Due to the humidity in the tombs, the pigments on these urns were almost completely faded, so at first glance it seems that these now „bare“ urns were not even painted. The purpose of the paper is therefore to present the results of a recent study focused on the colours and the composition of pigments on Etruscan urns. The research of pigments was conducted in collaboration with the PhD supervisor L. Ceccarelli and the Politecnico di Milano. The analysis of the pigments was conducted with a non-destructive technique using an pXRF. Both the supports and the preserved pigments were analyzed on alabaster, tufa and terracotta urns at the Volterra Museum and the Chiusi Museum. At the same time, a very rare motif of a large eye on the wings of Etruscan demons, whose depictions the PhD student is researching for her dissertation project, was explored. On a few urns, this motif is shown in painting, suggesting a probably purely Etruscan motif on the Hellenistic urns of northern Etruria. The results of this research will be presented in the paper as well.

6 THERE WILL BE BLUE - MULTISPECTRAL IMAGING IN HERITAGE MANAGEMENT

Abstract author(s): Steigberger, Eva (Bundesdenkmalamt) - Krickl, Robert (Austrian Academy of Sciences)

Abstract format: Oral

Modern analysis using techniques that don't disturb the surface and do not need to destroy however small parts or pieces of a monument open up new perspectives not only for archeological research but also for heritage management. The presentation will give a quick overview on said techniques and its potential for heritage management. The Monuments Authority's archeology Department initiated and financed a project in 2019 to investigate the possibilities. Together with the partners at Brunn Heimathaus, Mannersdorf am Leithagebirge, Museum Lauriacum and in our own depot at Mauerbach multispectral pictures were taken and surprising results are presented

The feasibility study focused on noninvasive techniques with portable devices that can be applied under conditions in museums – without moving objects from their place of display and sometimes even under protective glass. Important was the cross checking of methods and the evaluation of respective advantages and limitations. (Equipment and

expertise provided by Forschungsinstitut Dr. Robert Krickl and University of Vienna) Main methods included X-ray fluorescence spectroscopy, Raman-spectroscopy and multispectral imaging techniques. The talk will mainly focus on the latter.

Analysis was carried out on following objects:

the spolium of a 4th century roman grave from Brunn am Gebirge (Lower Austria) – a gravestone from the museum in Mannersdorf (Lower Austria), gravestones from Vienna/Vindobona from a rescue excavation in Ottakringer Straße (Vienna) with polychrome paintings and Roman murals from Lauriacum (modern day Enns, Upper Austria) were documented.

From a heritage management perspective, method and feasibility for modern heritage management and the decision making process in restauration and conservation will be outlined and discussed. Analysis in regards of preservation, conservation history of objects in museums and expected condition will be presented and future use of this combined methods in said processes evaluated.

7 COLORFUL INDICATIONS OF (EX)CHANGE: AN EVALUATION OF PIGMENT PRODUCTION AND TRADE IN THE PERIPHERAL PROVINCE NORICUM

Abstract author(s): Rodler, Alexandra (Research Group Object Itineraries, Department Historical Archaeology, Austrian Archaeological Institute, Austrian Academy of Sciences; Department of Lithospheric Research, University of Vienna) - Baragona, Anthony J. (Freelance, affiliated with Institute for Conservation, University of Applied Arts) - Tober, Barbara (Faculty of Classical Studies, Department of Classical and Early Aegean Archaeology, University of Salzburg)

Abstract format: Oral

The Roman period was particularly colorful – people processed certain raw materials to use them as colorants and their material qualities and provenance mattered. Yet, little is known about where these materials came from and where they were processed. Some materials, such as cinnabar, are rare in nature, which is reflected in their application in ancient art; other mineral pigments were produced from easily available resources and were likely an output of metal- and glass production- and trade networks.

Through mineralogical-petrographic and geochemical analysis on both pigment and wall painting samples, we evaluate production processes and raw material provenance of cinnabar and Egyptian blue paint from Noricum after it became part of the Roman Empire in the 1st c. BCE. We compare this to Italian examples and to reference data to reveal if raw material trade and/or processing was centralized or if mineral pigment production- and trade networks relied on a multitude of suppliers.

While pigment provenance research is still in early stages compared to metal, glass or ceramic artifacts, works like ours contribute to reconstructing economic networks that existed between Roman provinces as well as to a better understanding of the cultural significance of ancient colorants and their relevance for archaeological research.

8 ADDING COLOUR TO EARLY ROME: INVESTIGATING ARCHAIC DECORATED MUDBRICKS FROM THE ROMAN FORUM

Abstract author(s): Sauer, Nikoline (University of Cambridge)

Abstract format: Oral

Over the last decades, new archaeological evidence and a growing body of science-based research have started to alter the way we understand the history of early Rome. This study aims to investigate two mudbrick fragments found during excavations of the Temple of Castor and Pollux in the Roman Forum in the 1980s. The mudbrick fragments dating back to the 6th century BCE are coated with lime plaster decorated with red, blue, purple and white bands. Mudbricks from both this region and period are extremely rare, but to find well-preserved mudbricks decorated with four different colours is exceptional. The Archaic mudbricks are to be studied by non-destructive and micro-destructive methods: XRF, Raman, LA-ICP-MS, SEM-EDS, XRPD and FTIR. The investigation will enable the characterisation of raw materials and ceramic technology and provide information on provenance. The study allows us to revisit old archaeological material by means of new methods and investigate a unique material group from a key archaeological site, which can elucidate the architectural decoration of 6th-century Rome and contribute to novel insights into the society and organisation of the early city.

9 ARCHAOMETRIC STUDY OF PIGMENTS IN THE ROMAN WALL PAINTINGS OF LIMONUM (POITIERS, FRANCE)

Abstract author(s): Iuliano, Adriana - Galluzzi, Francesca - Pianet, Isabelle (Archéosciences Bordeaux, UMR 6034 CNRS, Université Bordeaux Montaigne, Université de Bordeaux) - Carrive, Mathilde (Hellénisation et romanisation dans le monde antique - HeRMA, UR 15071, Université de Poitiers)

Abstract format: Oral

Roman influence expanded in Gaul from the 3rd century BC and culminated with the conquest and definitive administration of the region under Augustus, bringing with it new construction and decoration techniques, including wall painting. Gallo-Roman decorative traditions, initially strongly influenced by Italian models and techniques, are known for gradually acquiring their autonomy and originality in the second half of the 1st century AD. This raises questions on possible changes in the choice of pigments and raw materials by craftsmen of the time.

Painting production in southern Gaul is well studied and documented from an archaeological and artistic point of view. In the last ten years, archaeometric studies have also been carried out, albeit limited to a single or a group of close, contemporary buildings, therefore not allowing an understanding of the evolution of practices employed in ancient painting.

This research focuses on the archaeometric study of a large corpus of wall paintings in the Roman province of Gallia Aquitania, that of the painted plasterwork of the ancient city of Limonum (today Poitiers, France). Several lots from old and recent excavations, most of which including multiple polychrome decorations, were analysed in order to identify the colour palette used in wall paintings. By applying a multi-analytical protocol consisting of physico-chemical techniques, both in situ and in the laboratory (including digital and optical microscopy, hyperspectral imaging, pXRF, FORS, amongst others), it was possible to characterise the original pigments and painting techniques, as well as the way past colours were prepared, combined and applied in the wall paintings of Limonum.

10 AQUILEIA, A COLOURFUL ROMAN CITY. THE POLYCHROMY OF ROMAN SCULPTURES IN THE NATIONAL ARCHAEOLOGICAL MUSEUM OF AQUILEIA

Abstract author(s): Lenzi, Sara (Università di Pisa) - Angelini, Ivana - Deiana, Rita (Università degli Studi di Padova) - Novello, Marta (Museo Archeologico Nazionale di Aquileia) - Salvadori, Monica - Zoleo, Alfonso (Università degli Studi di Padova)

Abstract format: Oral

The National Archaeological Museum of Aquileia, a Roman city close to the Adriatic Sea, nowadays in north-eastern Italy, hosts a permanent exhibition of Roman sculptures with many traces of polychromy. The colours of mosaics and wall paintings of Aquileia are well known to the scholars, but the colours of the sculptures are widely unknown and rarely cited in literature.

Among the sculptures with an easily recognizable polychromy (architectural decorations, funeral reliefs, statues), some were chosen, in order to give new and unpublished information about the colours on marble and stone of the Roman Aquileia. A head of Apollo, a female head, a funerary stela of a young girl and other objects with traces of polychromy were studied with the support of archaeometric analyses (among them, FORS and Raman spectroscopy). This paper will show the results of the first and second campaigns of analyses, carried out in the museum of Aquileia between September 2022 and February 2023.

11 THE ROLE OF COLOUR IN THE CULT OF MITHRAS: SOME EXAMPLES OF STONE MONUMENTS FROM CARNUNTUM

Abstract author(s): Silnovic, Nirvana (Österreichisches Archäologisches Institut)

Abstract format: Oral

The importance of colour in Roman visual culture has been emphasized by a number of recent studies dedicated to sculptural (and architectural) polychromy. Indeed, colour was for the Romans a basic unit of perception and a source of value and meaning attached to the objects. However, despite the growing awareness of the essential role of colours in visual communication in both public and private contexts, their potential meanings are rarely explored. The PolychroMon project (Heritage Science Austria/Austrian Academy of Sciences, 2021-2025), dedicated to the study of the polychromy of Roman stone monuments from the Danubian provinces, takes socio-religious significance of colour as one of its main focuses. For this purpose, special attention is given to the monuments of the Mithras cult which occupy a prominent place in the collections of the Archaeological Museum Carnuntinum and Kunsthistorisches Museum in Vienna. Based on selected examples, several important questions about the use of colour in the cult of Mithras will be explored. Was there a specific colour code in the local cult of Mithras? What was the function of colour in the ritual context of the cult? What religious ideas were expressed with colour?

12 POLYCHROMY IN PRACTICE: REDISCOVERING PIGMENTS ON SCULPTED RELIEFS FROM NORTHERN BRITAIN

Abstract author(s): Campbell, Louisa (University of Glasgow)

Abstract format: Oral

Frontier regions were, by their very nature, dynamic and complex cultural contexts. These unique environments stimulated hybrid practices negotiated through the reception, perception, use and reuse of Roman material culture that stretched to methods and materials used in polychromy practices which brought iconic sculpted reliefs to life. Focussing on innovative methodologies to investigate and interpret Roman artefacts from the Empire's north-western frontier, this paper develops multi-disciplinary approaches to the non-destructive analysis of iconic monumental inscriptions and relief sculptures carved into sandstone and limestone from Northern Britain.

New evidence will be presented for polychromy in practice through traces of previously unknown pigments adorning Distance Sculptures unique to the Antonine Wall in Scotland and iconic altars from the Mithraeum at Carrawburgh on Hadrian's Wall. These revelations have a transformative impact on our interpretations and representations of sculpted reliefs and monumental inscription from the frontier, revealing new dimensions and adding new layers to our understanding of how they performed for ancient audiences. They permit new insights into artefact assemblages; exploitation of previously untapped research potential of curated collections; and authentic digital reconstructions. This work derives from a broader research project examining the effectiveness of emerging technologies on a range of material culture classes.

13 COLOUR TRACES ON ROMAN MONUMENTS FROM NORTHERN MOESIA INFERIOR

Abstract author(s): Alexandrescu, Cristina (Institutul de Arheologie Vasile Parvan)

Abstract format: Oral

Besides the marble monuments from the territory of the province of Moesia inferior, dated to the pre-Roman and Roman times, the colour traces on the pieces carved in local stones (limestones, sandstones) have not been the object of detailed investigation, given their rarity and poor state of conservation. The present contribution provides an overview of the finds (votive altar, funerary stelai and architectural elements) from the northern part of the province, and of the non-invasive investigations carried on up to now. The comparative analysis with other similar finds from the Roman provinces (e.g. Pannonia, Gallia) highlights both the existence of this kind of monuments in this remote region of the empire and the need of dedicated studies and search for suitable methodological approach when dealing with stone monuments, even if fragmentary. In addition, the benefit for the valorisation and presentation of individual monuments in the museum exhibition will be considered.

14 POLYCHROMY OF FUNERARY MONUMENTS AND ARCHITECTURE IN EAST-CENTRAL GAUL: A REVIEW OF RESEARCH

Abstract author(s): Edme, Anne-Laure (Inrap Grand-Est, Châlons-en-Champagne; UMR 6298 ARTEHIS) - Delferrière, Nicolas (Université de Toulouse Jean Jaurès; UMR 5608 TRACES) - Ribolet, Mathieu (UMR 6298 ARTEHIS)

Abstract format: Oral

Since 2014, the careful macroscopic observation of traces of polychromy preserved on Gallo-Roman lapidary blocks in the museums of Bourgogne-Franche-Comté and the Grand-Est region has made it possible to bring together a substantial corpus of varied polychromatic traces, mainly on funerary monuments (steles, fragments of aediculae or mausoleums) of the ancient cities of the Aedui, Sequani, Lingoni and Senoni. Our work on the subject continues, at an irregular but sustained pace, to complete this corpus thanks to new archaeological discoveries or thanks to the restoration of some ancient blocks, which makes it possible to reveal elements that were no longer visible. In addition, analyses can be carried out on these occasions, although unfortunately not often enough. For the past two years, we have also added to our research the study of architectural blocks that come from ancient buildings of the Senonese city, not specifically funerary. The aim of this paper is to propose an assessment of all our observations and studies to show the diversity of the use of polychromy on lapidary in a Gallo-Roman provincial context.

15 PAINTING TO COMPLEMENT SCULPTURE: THE UNIQUELY PAINTED DETAILS IN THE GALLO-ROMAN COLLECTIONS OF CENTRAL-EASTERN GAUL (BOURGOGNE-FRANCHE-COMTÉ AND GRAND-EST, FRANCE)

Abstract author(s): Delferriere, Nicolas (Université de Toulouse Jean Jaurès, UMR 5608 TRACES) - Edme, Anne-Laure (Inrap Grand-Est, Châlons-en-Champagne)

Abstract format: Oral

Among the various coloured elements that can be found on Gallo-Roman sculpture, some correspond to coloured backgrounds and rubricatio around details, others to the colour enhancement of certain already sculpted details (hairs or objects), but there are elements that are only painted and which therefore attest to the particularly close work between the sculptor and the painter. These may be details of eyes, hair, clothing, or architectural or plant details. The aim of this paper is to show the potential of these types of coloured highlights, which testify to the variety of practices in the implementation of polychromy. The preserved elements also give us a glimpse of the important information that we have lost with the fading of the polychromy on many of the provincial sculptures. The examples used come mainly from funerary monuments preserved in large numbers from the collections of Gaul in the Centre-East (Gallia Lugdunensis and Gallia Belgica), mainly from the current regions of Burgundy-Franche-Comté and Grand-Est in France.

16 THE RED AND THE STONE: SOME OBSERVATIONS ABOUT POLYCHROMY OF ROMAN ARCHITECTURE IN AGEDINCUM (SENS, FRANCE)

Abstract author(s): Ribolet, Mathieu (UMR 6298 ARTEHIS) - Delferriere, Nicolas (UMR 5608 TRACES; Université Toulouse Jean Jaurès)

Abstract format: Oral

Located in the western part of Gallia Lugdunensis, the city of Agedincum (Sens, France) is well-known for being the ancient caput civitatis of the Senones. Such a status ensured the development of monumental architecture over the first centuries AD. A few of these important monuments were discovered by archaeology, such as an amphitheater, a forum or an important extra-urban religious complex.

The urban architecture of Agedincum is yet very partially known. As in many other cases indeed, the city was completely covered over from the medieval period. Thus, trying to reconstruct the ancient city mostly relies on studying hundreds of architectural stones and sculptures, all reused within a late antique city wall and discovered from the 19th century.

Traces of polychromy are still preserved on the surface of many architectural stones of Agedincum : scholars noticed it from the 19th century and early tried to understand what colored roman buildings looked like, though they were unable to reconstruct anything credible. Recently, new studies about the lapidary collection of Agedincum led to deal with the question of the color of its ancient monuments : observing and analyzing the traces and trying to reconstruct whole façades should allow a better understanding of the antique visual environment.

In this lecture, we intend to focus specifically on red color, which is the most frequently visible on architectural blocks. Red seemed to have been used for different purposes : preparing surfaces, painting backgrounds, underlining frames or patterns, adding details. From different examples of Agedincum, we will try to identify these different cases and to study its technical and stylistic characteristics.

32 THE PUBLIC INTERPRETATION AND PRESENTATION OF MEGALITHIC MONUMENTS AND SITES: CHALLENGES FOR BEST PRACTICE

Session theme: 3. Heritage Narratives and Representations

Session organisers: Jameson, John H (ICOMOS ICIPI/ ICAHM; U.S. National Park Service, Retired) - Sebire, Heather (English Heritage)

Session format: Regular session

From the Neolithic period with the arrival of farming and use of pottery at least 6,000 years ago to the beginning of the Bronze Age, people used megaliths (large stones), earth, and wood to build grandiose monuments. The number and sheer diversity of these structures is astonishing, from massive stone rows and circles to barrows, chambered tombs, and earthwork enclosures. Our knowledge of the category of monuments known as Megaliths has increased considerably in the last ten years as documented in the recently published *Megaliths of the World* volumes (Laporte et al 2022).

Many of these sites survive today in a ruinous condition and are not easily legible to the public, so the challenges and complexities surrounding the management and public interpretation of these sites are often formidable. We pose

these questions: What strategies have been most effective in providing opportunities for public audiences to appreciate site significance and resource meanings? For example, how have local communities been allowed to participate in decision making processes for management and interpretation schemes? What community-level programs have been developed? How effective are these strategies? What are the present and future trends in managing and interpreting these sites, many of which may be in areas affected by changing weather patterns?

This ICOMOS-endorsed session presents best practice strategies for public interpretation for the incredible quantity and complexity of Megalithic sites in Europe and around the world. Continuing collaborative efforts that began in the UK in 2013, our goal is to gather extensive multinational examples that can be extrapolated into an internationally relevant best practice guidelines document on the Public Interpretation and Presentation of Megalithic monuments and sites.

ABSTRACTS

1 BRÚ NA BÓINNE: INTERPRETATION AND COLLABORATION

Abstract author(s): Gleeson, Pauline (National Monuments Service; Department of Housing, Local Government and Heritage) - Breen, Claire (National Monuments Service)

Abstract format: Oral

Brú na Bóinne: the archaeological ensemble of the Bend of the Boyne and one of the World's most important prehistoric landscapes, was inscribed on the UNESCO World Heritage List in 1993. Four years later a dedicated interpretative centre opened within the World Heritage Property on the banks of the River Boyne and since then this has been the entry point for visitors to the renowned Neolithic Passage Tomb complexes of Newgrange and Knowth.

In 2017 planning commenced on a project for the renewal and updating of the centre to provide a more interactive and immersive visitor experience, embracing new digital technologies and incorporating new research. The passage tombs at Brú na Bóinne contain the largest assemblage of megalithic art in Europe and the project provided an opportunity to present this information to the public in dramatic form and raise awareness of its significance. This paper examines the experience of the National Monuments Service, the expert archaeological advisors and the Office of Public Works Guide Service in the development of the new public interpretative centre at Brú na Bóinne. It explores the challenges, the complexities and crucially the collaboration required to ensure the accurate interpretation of this immensely rich archaeological landscape.

2 MANAGING A MOUNTAIN OF DATA – THE DOWTH HALL PASSAGE TOMB EXCAVATION

Abstract author(s): Ni Lionain, Cliodhna (Devenish; UCD School of Archaeology) - Meegan, Eimear (The Discovery Programme; Virtual Lab, TU Dublin) - Mendoza, Jessica (Carleton Immersive Media Studio, Carleton University) - Murphy, Maurice (Virtual Lab, TU Dublin) - Williams, Ken (www.shadowandstone.com)

Abstract format: Oral

In 2017, the ruins of a large passage tomb were found in the UNESCO World Heritage Site of Brú na Bóinne during a programme of archaeological monitoring at Dowth Hall, Co. Meath (Ireland). Dating back to at least 3100 BC, the passage tomb has witnessed various interventions, including partial destruction, over the course of its long life. Its surviving remains, which include two megalithic chambers and six kerbstones, have been recorded using both traditional archaeological methods and newer digital technologies, including photogrammetry. The 18-month long excavation has produced a huge dataset, which now poses both a problem and an opportunity regarding the management, presentation, and preservation of this unique resource.

As we begin to scale the foothills of this mountain of data, this paper will explore the possibilities of virtual presentations of archaeological data, both in terms of in situ remains and reconstructions, with a particular focus on a general public audience. The Dowth Hall dataset is also a significant research resource for archaeologists, and its accessibility and ease of utility for researchers is an important objective. To achieve this, we are exploring the potential of Historic BIM (Building Information Model) for the long-term curation and presentation of the data, as well as for site management and monitoring. As part of this process, we have begun to develop workflows for the conversion of the digital survey data into 3D solid models with associated semantic attributes. The complex and irregular nature of prehistoric monuments is a challenge for HBIM, but this approach has many advantages, particularly in the automation of documentation for recording, analysis and conservation, and presentation using VR and game engines. If successful, this could be a useful tool for monitoring of other prehistoric world heritage sites.

3 RE-IMAGININGS: CREATIVE DIALOGUES AND APPROACHES TO THE PRESENTATION AND INTERPRETATION OF MEGALITHIC MONUMENTS

Abstract author(s): Wexler, Jennifer (English Heritage)

Abstract format: Oral

Britain features an impressive range of megalithic monuments, such as Stonehenge and Avebury as well as numerous lesser known sites. Often shrouded in layers of speculation and folklore, these iconic monuments have spurred myths and wonder that persist today. These are resonant and inspirational places for communities to connect both to nature and the past. This paper will look at how can we present the complex, layered archaeology and histories of these sites while also cultivating curiosity and dialogues around ideas of deep histories, landscapes, and our connection to place and nature through the use of creative interpretation strategies. By collaborating with artists and storytellers, how can we draw out these archaeological stories in new and engaging ways to connect with diverse audiences as well as local communities? Case-studies will include recent examples from museums and archaeological site contexts, including the World of Stonehenge Exhibition at the British Museum (February – July 2022) and reinterpretation schemes at Grimes Graves, Thornborough Henge, and Stonehenge, managed by English Heritage.

4 POTENTIAL OF INTERPRETATION FRAMEWORK METHODOLOGIES TO CONTRIBUTE TO THE PUBLIC INTERPRETATION AND PRESENTATION OF MEGALITHIC MONUMENTS AND SITES

Abstract author(s): Mills, Nigel (Nigel Mills Heritage)

Abstract format: Oral

Principles of good interpretation as understood by professional heritage interpreters (e.g. Association for Heritage Interpretation, USA National Association for Interpretation, Interpret Europe) should underpin all aspects of the public interpretation and presentation of archaeological monuments and sites.

The Interpretation Framework methodology first developed for the complex archaeology of the Hadrian's Wall World Heritage Site from 2011 has significant potential for application to other archaeological complexes including those addressed in this session. The methodology is especially useful in situations where there may be multiple sites with potentially similar and competing narratives, enabling development of diverse narratives and complementary visitor offers. The methodology is now widely used across the Frontiers of the Roman Empire World Heritage Cluster and has been applied also in developing community focused interpretation of prehistoric landscapes.

The paper will briefly explore the principles of good interpretation before moving on to describe the Interpretation Framework methodology and its application to interpretation and public presentation of archaeological monuments and sites.

5 THE BATTLE OF A MURADELLA (FORNELAS, GALICIA, SPAIN): CONFLICT, COMMUNITIES AND DISSEMINATION AROUND AN ATLANTIC CAIRN

Abstract author(s): Ayán, Xurxo (NOVA University of Lisbon) - Paulos-Bravo, Rodrigo (Complutense University of Madrid)

Abstract format: Oral

A Muradella is a mysterious pile of stones at the top of a mountain in the interior of Galicia, in the northwest of the Iberian Peninsula. This monument miraculously survived the opening of tracks, the reforestation and the summer fires. It has remained until today due to its role as a border landmark between peasant communities. In July 2022 the authors of this paper began a scientific project to elucidate the archaeological nature of this site. Finally, we have shown that it is a cairn-type megalithic monument dating from the Final Neolithic, unique in Galicia.

In this paper we will analyze the conflictive process of patrimonialization of this monument. We will show the legal conflicts between border communities, the economic interests that come together in this monument and the problems we had to value this place of memory. We believe that sharing our experience can be useful for other colleagues working in similar contexts. Our socialization strategy was based on transparency, on the real-time disclosure of the progress of the research on social networks, and on the real integration of the neighbors in the project. In fact, the research has been promoted and financed by two neighborhood associations. Our work with the media and the elaboration of didactic material has led to A Muradella being studied in primary schools in Galicia. We have achieved all this in a period of eight months. In this period, a mysterious pile of stones has become a tourist resource, an identity reference and a unique monument in Galician archaeology. On December 31, 2022, the entire village of Fornelas went up to A Muradella to celebrate the end of the year, after we released the results of the C-14 dating that show that this cairn was built between 4700 and 4600 cal BP.

6 SIGNED, SEALED, DELIVERED! THE MEGALITHIC MONUMENTS PRESERVED IN THE MOAT OF THE FRENCH NATIONAL MUSEUM OF ARCHEOLOGY OF SAINT-GERMAIN-EN-LAYE

Abstract author(s): Simon-Millot, Rolande (Musée d'Archéologie National - Domaine national de Saint-Germain-en-Laye et UMR 6298 ARTEHIS „Archéologie-Terre-Histoire-Sociétés“ Université de Bourgogne-CNRS-MCC) - Mertz, Jean-Didier (Laboratoire de Recherche sur les Monuments Historiques - LRMH-USR3224) - Pariat, Jean-Gabriel (Service départemental archéologique du Val-d'Oise - SDAVO et UMR 7206 - Anthropologie biologique et Bio-archéologie - ABBA)

Abstract format: Oral

The french National Archaeological Museum, created in 1862 in the former royal castle of Saint-Germain-en-Laye, near Paris (France), has housed megaliths since 1870, not only inside its reserves but also outside the castle, in the moat and in its courtyard. This special collection concerns not only polishers, menhirs and others upright stones but also two large covered passages entirely reconstituted in the moats: the passage grave of Conflans-Sainte-Honorine (Yvelines), acquired by the museum in 1872, transported and reconstructed on site in 1873 and the one known as “Trou des Anglais” in Aubergenville, donated to the museum in 1892, transferred in 1901 and rebuilt in the moat next to the first.

Even today these two great monuments are visible in the moat of the castle but they have not been visited for a long time. Many damages caused by the presence of ivy have been observed, as well as the risk of collapse of orthostats or surface alterations of sandstone and limestone slabs suffering from stone disease caused by urban pollution. The museum has been engaged for two years now in the search for a solution. Unaccustomed to the management of “out-door” collections, it contacted the Historic Monuments research laboratory as well as the Val d'Oise archaeological service, which already manages and supports the conservation and presentation of many megaliths in Parisian region. The idea is not only to bring its monuments back to life, but also to make them accessible to the public again. Another aspect to be valued will be the link with the town of Saint-Germain-en-Laye: the moat is indeed visible not only from the museum but from the public square. How can the local community reclaim these monuments that it sees every day but does not recognize?

7 TURNING ANCIENT GRAVES INTO MODERN ATTRACTIONS. A NOVEL SIGNAGE SYSTEM FOR WESTPHALIAS MEGALITHIC TOMBS

Abstract author(s): Kopner, Lea (Altertumskommission für Westfalen; Universität Münster)

Abstract format: Oral

The Altertumskommission für Westfalen (Antiquities Commission for Westphalia) is committed to making research on the Westphalian megalithic tombs accessible to the local public. One measure in this context is equipping these sites with specially developed information pillars in the form of large, stylised boulders made from steel. These act as a uniform signage system for the Westphalian megalithic graves, but also show the connection to the European cultural route “Megalithic Routes“. Since 2014, the Commission has been a member of the related association, whose aim, among other things, is to promote the cultural and touristic value of European megalithic sites while improving their protection as part of the common cultural heritage. The brand character of the elements and the associated connection to a European network is particularly appealing to the municipalities.

The Westphalian section bears the name “Weg der großen Steine” (“Path of the Great Stones”). Its stations, the sites of the megalithic tombs, are designed in close cooperation with the respective municipalities. Apart from the pillars, the grave surroundings are restored to create attractive destinations. Text panels on the stelae provide information about the European Cultural Route and the respective Neolithic culture (Funnel Beaker or Wartberg Culture) with its special features in lifestyle and burial customs. There is also more detailed information on the respective grave, its research history and finds. A second, digital level of knowledge with further information and additional media can be accessed via a QR code. This way, the latest research results can be quickly presented to the public.

So far, six sites have been equipped with steel elements. Among them is one location where the megalithic tombs are no longer visible. By installing the units, the site is once again a marker in the region, as the burial sites were originally.

8 ARCHAEOLOGICAL MONUMENTS, MATERIAL MEMORIES AND LONGUE DUREE ANDEAN HISTORIES IN THE ATACAMA DESERT (ILUGA, TARAPACÁ, 100BC-AD1900)

Abstract author(s): Uribe, Mauricio (Universidad de Chile) - Saintenoy, Thibault (thibault.saintenoy@incipit.csic.es) - Urizar, Carlos (Magíster de Arqueología Universidad de Chile) - Urrutia, Francisca (Magíster de Arqueología Universidad de Tarapacá)

Abstract format: Oral

For Andean peoples, since the Formative/Neolithic period (± 1800 BC), it has been argued that burial mounds evoke the idea of hills or mountains, which represent the physical legitimisation of the use, exploitation or control of territories. In this sense, the very process of constructing and demonstrating ceremonialism in the burial mounds would reflect common logics of identity, power and competition through ancestral relationships that were being developed and that would have repercussions in later periods up to the present day. As a way of evaluating these approaches, we present the study of the Iluga Túmulos site, adjacent to the well-known Atacama Giant geoglyph, which comprises a ceremonial complex of 72 hectares in the middle of an agricultural complex of 4150 hectares, in the centre of the driest desert in the world. It has more than 120 artificial mounds, some megalithic elements, productive areas, public sectors such as plazas or ponds, mud residential structures and cultivated fields that extend across the pampa. The burial mounds have a wide temporal range, dating from the Formative period (American Neolithic) to the Late Colonial and Hispano-Colonial periods. This continuity constitutes a particularity of the site, reflecting in their construction and occupation, the participation of different cultural and political groups that managed the monuments according to their particular interests. Consequently, these Andean expressions challenge the imaginary of modernity that promotes the desert as a hostile and dehumanised space. In contrast, our study coincides with the vision of the local villagers who conceive of this space as fertile, productive and nourishing. Therefore, in order to document and value these symbolic technologies, local forms of water management and work organisation must be recognised, validating and making traditional knowledge visible as an alternative for the ecological restoration of the desert, affected by industrialisation and current climate change.

9 INTERPRETING A PREHISTORIC ICON FOR A GLOBAL AUDIENCE; CHALLENGES AND OPPORTUNITIES

Abstract author(s): Sebire, Heather (English Heritage)

Abstract format: Oral

Following on from the seminar known as The Challenges and Opportunities for Interpretation and Presentation of Megalithic Sites and Monuments in Salisbury in 2013 some ten principles of interpretation were suggested as universal to these sites.

The principles include how to interpret the widespread adoption of farming and a more settled life; a fundamental change in the way that people interacted with the landscape; an insight into the social and symbolic meaning of these monuments; how the sites were conceived, built and used by people on foot; how our understanding of their society is based on a partial physical record; that megaliths invoke a strong human response; that the monuments in the landscape are often separated from the collections usually displayed or stored in a museum and that the resource of many of these sites is vulnerable.

This paper will illustrate some aspects of how these principles were thought to have universal application with a case study from Stonehenge in the UK where an award-winning Visitor Centre was opened at the end of 2013. In the Visitor Centre there are permanent and temporary galleries as well as an outdoor gallery with a reconstructed Neolithic village all of which and including Stonehenge itself help to convey to visitors an idea of the meaning and identity through time that the earthworks and stones of Stonehenge represent.

10 CIRCLES OF STONE: STONEHENGE AND PREHISTORIC JAPAN: AN EXERCISE IN COLLABORATION AND INTERPRETATION

Abstract author(s): Kaner, Simon (Sainsbury Institute for the Study of Japanese Arts and Cultures) - Sebire, Heather (English Heritage) - Bouchard, Dominique (English Heritage; Research Centre for Museums and Galleries, University of Leicester)

Abstract format: Oral

English Heritage has welcomed colleagues and students from Japan to Stonehenge for several years though collaboration with the Sainsbury Institute for the Study of Japanese Arts and Cultures and the University of East Anglia. This collaboration led to the idea of a temporary exhibition at the Stonehenge Visitor Centre showcasing the prehistoric Jomon Prehistoric Sites of Northern Japan World Heritage Site and Niigata Prefectural Museum of History, Nagasaki.

In 2022, English Heritage in partnership with the Sainsbury Institute and the University of East Anglia produced Britain's first ever exhibition about Japanese stone circles at Stonehenge World Heritage Site. The 'Circles of Stone' exhibition tells the remarkable story of parallels between neolithic cultures and communities who, while thousands of miles apart, have many similarities.

This paper will address the many challenges and opportunities of managing an exhibition with colleagues almost 6000 miles away: how it was possible to bring artefacts to Stonehenge from Japan including a spectacular flame pot and interpret the connections for the global audience that Stonehenge attracts. It also will explore the challenges of interpreting deep history for visitors unfamiliar with Japan's prehistoric histories, and the opportunities provided by this multi-sector international collaboration for collective learning and sharing of best practice.

11 THE SALISBURY SEMINAR: „CHALLENGES FOR BEST PRACTICE IN THE PUBLIC INTERPRETATION AND PRESENTATION OF MEGALITHIC SITES IN WESTERN EUROPE“

Abstract author(s): Jameson, John H (ICOMOS)

Abstract format: Oral

A seminar was organized in Salisbury, England in the fall of 2013 with the aim of beginning a discussion on the characteristics and challenges for best practice in the public interpretation and presentation of Megalithic sites and landscapes. Although the working group focused on sites in Western Europe, our findings have application to Megaliths globally. Organization was led by John Jameson (ICOMOS ICIP, NPS Retired) and Heather Sebire (English Heritage) with several other leading specialists in the field from other countries in Western Europe taking part. Our goal was to address the challenges and opportunities, tied to defined site characteristics, for interpretation public outcomes and offer a list of best practice exemplary case studies. The agenda included: (1) Participant presentations (principally public interpretation and community outreach case studies and examples -- what has worked and what has not worked, etc.); (2) Resource immersion (local site tour); (3) Participant breakout sessions on observed and suggested best practice examples; (4) Breakout session reports; and (5) production of an Outcome Summary to lay the groundwork for the development of an Illustrated Best Practices Guidelines Document with international application and relevance. The seminar included a field trip to Stonehenge where an award winning Visitor Centre was opened at the end of 2013. It was hoped that we could produce at least a start at developing the best practice document. This presentation will address, in today's context, the findings, case study examples discussed, and general contributions of the seminar.

37 HEART OF STONE: MEDIEVAL PERCEPTIONS OF STONE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Berryman, Duncan (Centre for Community Archaeology, Queen's University Belfast) - Reid, Aisling (Queen's University Belfast) - Surace, Valentina (University of Messina)

Session format: Regular session

Stone was a widely used material throughout the Middle Ages. It was used in buildings of all social statuses, in industry or agriculture (e.g. for loom weights or plough stones), and also for sculpture. Regular contact between people and stone will have resulted in perceptions of the material. Stone is a perpetual material, thus it was often reused—e.g. Roman inscribed stones in medieval churches across Europe and prehistoric rock art on slabs in Irish souterrains.

Stone was conceptually complex in medieval culture; for theologians like the thirteenth-century scholar Albertus Magnus it was a 'lively' material with idiosyncratic personality traits. In a similar vein, Leonardo da Vinci's fable about a stone imagines the world from a petrine perspective. Such thinking clearly anticipates Jane Bennett's recent research into Vibrant Matter and reveals much about how and why stone was conceived as a 'living' entity in medieval culture.

This session seeks to expand on our knowledge of stone in a later medieval context and to explore it from many different perspectives. Combining archaeological data with insights from multidisciplinary studies will enhance our understanding of the choices made in selecting stone for buildings and monuments. It will also shed light on its broader conceptualisation in medieval culture.

Some topics we would like to cover include (but are not limited to):

- The use of stone in medieval buildings (as opposed to timber or other materials)
- The choice of stone for sculptures and funerary monuments
- Medieval perceptions and knowledge of stone
- The re-use of earlier stones in later medieval contexts, or the re-use of medieval stones in modern contexts
- The symbolism associated with stone and stone objects
- The trade of stone as a building material
- The intersection of medieval and modern thinking about stone

1 THE MORTAR WRECK - A 13TH CENTURY SHIP CARRYING A CARGO OF STONE

Abstract author(s): Cousins, Thomas (Bournemouth University)

Abstract format: Oral

In late summer 2019 a shipwreck was discovered in Poole Bay, Dorset carrying a cargo of what appeared to be random rubble.

Further investigations into the wreck revealed it to be a mid-13th century ship, making it one of the oldest shipwrecks in England. The ship was carrying a cargo of over 30 tonnes of unworked stone, as well as three grave slabs and over 30 stone mortars made from Purbeck Marble.

The quarrying and production of Purbeck stone was one of medieval England's major industries with thousands of marble artefacts adorning cathedrals and churches across the country and as far away as the Baltic from Royal Effigies to baptismal fonts.

The work on the wreck is only just beginning but questions have already been answered on the nature of the medieval stone trade and maritime logistics in the 13th century. The study of the wreck has also disrupted the conventional historical views of how and where the stone was exported from locally as well as the typological dating of Purbeck Marble artefacts.

2 RE-USE OF DRESSED LIMESTONE DETAILS IN THE CHURCHES OF ESTONIA

Abstract author(s): Kadakas, Villu (Tallinn University)

Abstract format: Oral

Limestone has been the dominant stone for making both the walls and the dressed details in northern Estonia, especially the layers of Lasnamägi Stage of which the whole medieval Tallinn and the churches along the northern coast were built. Re-used details have been noticed in various late medieval buildings by the 20th century scholars merely as filling material in the masonry. However, recent field studies have brought to light information that part of the dressed details (pillars, corbels, etc) with simple geometric forms may have been re-used in their original function, especially within the churches of northern Estonia. The hardness and brittleness of the stone of Lasnamägi Stage has constrained its use for sculpting. Usually, the details were given only geometric forms, which are characteristic to a long period. However, as the medieval archives of Estonia have been almost completely lost, in many cases these dressed details are the only basis for dating the whole building.

On the other hand, the hardness of the stone of Lasnamägi Stage has facilitated survival of the dressed details during demolition and their re-use in original function. Recent field studies indicate e. g. that part of the vault supports (pillars) may have had an earlier "life" as supports of timber ceiling either in the existing or in the previous church nave.

The aim of the paper is to illustrate and discuss the limits and possibilities to identify re-use of dressed stone details in their original function, as well as the overall benefits what can be achieved with systematic implementation of the theory and methods of buildings archaeology when studying medieval architecture, especially with limited written resources.

3 LIMESTONE, LIME PIT, QUICKLIME, SLAKED LIME, LIME MORTAR

Abstract author(s): Jancar, Mojca (Terarhis, Ljubljana, Slovenia) - Ravnik, Mateja (Intitute for the Protection of Cultural Heritage of Slovenia, RU Celje)

Abstract format: Oral

Limestone is a type of carbonate sedimentary rock, which metamorphosed by heat and pressure produces marble. Both forms have numerous uses in construction, agriculture, art and industry. Limestone is hard, durable and readily available as it commonly occurs in easily accessible surface exposures. In the Middle Ages it was a very popular building material for churches and castles in areas where it occurs. As building material can be used in many various forms such as block or brick, decorative moulding, gravel or as a raw material for the production of lime.

Our research will focus predominantly on the use of limestone in the Middle ages as a part of the mortar that binds building elements together. We will try to show its journey from the quarry to the finished building and the work involved. We will also show, what impact the production of quicklime and slaked lime had on the environment and people.

4 ALL THAT REMAINS - RE-EVALUATING THE WORK OF 12TH C. STONEMASONS IN IRELAND UNDER THE REIGN OF THE O'CONOR KINGS

Abstract author(s): Dempsey, Gary (Atlantic Technological University - Galway City)

Abstract format: Oral

The study of historical buildings often focuses on techniques, material, and motifs, rather than the hands that worked the stone. The research behind this paper seeks to develop a personification of stonemasons in Ireland between 1100 – 1699. Examining the socio-economic of three distinct periods (1100 – 1200; 1200 – 1550; 1550 – 1699) where social change greatly affected the work of stonemasons. This paper will focus on the early period of 1100 – 1200, at a time when the O'Conor Kings were developing both a regional and national strategy. This aspect of Irish history is often overlooked in terms of importance, with focus generally being placed on the development of Anglo-Norman settlements.

The role of the stonemason in the O'Conor plan is an important one. While previous studies have suggested the Connacht Kings were not interested in church building (Kalkreuter 2001, p. 68, O'Keeffe 2003), fragmentary Romanesque sculpture at sites in the west demonstrate that the development of construction of stone churches was much more advanced in the region than previously discussed.

The paper will discuss the role of the stonemason in developing the ambitions of the O'Conor kings in 12th Century Connacht, and look at how the O'Conors may have had an unintended hand in the development of other better known Romanesque sites in Munster and Leinster. The paper will also examine the treatment of 12th Century stone buildings in later medieval periods and discuss how the decisions of stonemasons 'to do away with sculptured perceived to no longer be in fashion' (Moss, 2010, 123) at some sites, but retention of signification features at others has led to a misrepresentation of the extent of 12th Century stonework in Connacht.

5 PILLAR OF THE COMMUNITY: HOW THE ROLE OF STONE IN CASTLE CONSTRUCTION ALTERED COMMUNITY TASKSCAPES AND LIVED EXPERIENCES

Abstract author(s): Redmonds, Arthur (University of Exeter; University of Cardiff)

Abstract format: Oral

The construction, occupation, and abandonment of Later Medieval castles had significant consequences on the communities surrounding them. Lived experiences and memory were significantly altered whilst elite models of social order were stamped upon the landscape. The utilisation of stone was at many sites a significant part of this process, a textural reminder of inequality. Indeed, theoretical perspectives can be used to demonstrate that stone usage underlines the processes and thinking by which power and authority were constructed in Medieval England.

In order to provide theoretical insights into the Medieval relationships encapsulated in stone, this paper will look mainly at the rhythms that interacted with the masonry castle. To facilitate this, inspiration is drawn from Tim Ingold's famous paper 'the temporality of the landscape' which coined the term taskscape to refer to the landscape as a set of interconnected rhythms and temporal flows associated with dwelling. If we begin to assess the rhythms associated with stone, and contrast them with their surrounding landscape, we can begin to explore how the stone castle disrupted and warped the taskscapes around them.

Using a variety of smaller case studies, and viewed through the theoretical ideas associated with Tim Ingold's taskscape, this paper will explore three different aspects of the castle and stone relationship. Firstly, how stone castle construction used unfamiliar techniques, materials, and craftsmen to realign local temporal and spatial relationships within the landscape through disrupting community rhythms. Secondly, how the textural and material reality of these castles helped set elite castle holders aside from natural rhythms, and underlining a sense of timeless authority. Finally, in the vein of the work of Sally Smith, this paper will look at how the quarrying and reuse of castle stone might provide valuable insights into the resistance of local communities against elite social order and the castle.

6 STONE MORTARS, A MAINLY CULINARY TOOL IN LATER MIDDLE AGES: STONE CUTTING AND SCULPTURE LINKED TO BUILDING INDUSTRY?

Abstract author(s): Verbrugge, Geert (Inrap - National Institute for Preventives Archaeological Researches, Châlons-en-Champagne; Centre Michel de Bouïard, CRAHAM UMR6273) - Delmont, Estelle (Inrap - National Institute for Preventives Archaeological Researches, Achicourt; UMR 7041, équipe « TranSphères »)

Abstract format: Oral

From in the first significant study on this kind of tool, G.C. Dunning underlined – besides their reuse as building material – their close link to the construction materials industry, that whether in England (Purbeck Marble, Quarr and Weldon Stone), or on the Continent (Caen) in his King's Lynn study (Dunning 1977: 321, 324 and passim). Since then, the discovery in the 1970s of unfinished mortars in a Caen's stone quarry suggests a specialized activity along

the bank of the Orne, river connecting the norman city to the sea. For the Purbeck Marble, the recent discovery of the 13th century “mortar wreck” west of the Poole Bay (Dorset) now concretely illustrates a full shipping load combining mortars, grave slabs and building stones .

We will take stock of the contribution of recent studies on the continent with a special interest to the questions of its manufacturing. Indeed, for two decades, preventive archaeology has provided lots of new data illustrating plenty and diversified productions, for several of them by the rivers and the North Sea . A few rare unfinished exemplars are also to be noted. Considering the traces of stone cutting it is possible to approach the tools used for their manufacture. These are generally of an all-purpose limited variety suggesting a stonemason, in accordance with the functionality of this preparation utensil, mainly culinary in the late Middle Ages. Nevertheless, the shaping sometimes combines different finishing of the surfaces (base, container, etc), but in a limited number of cases also elaborate decorations, for instance some few combining faces and geometric patterns. The latter suggest the contribution of a sculptor’s workshop. In this regard, in Paris, the 13th century book of crafts and guilds provides details about morteliers, whose statutes are close to those of stonemasons.

7 **STANDING FOREVER OVER THE CROPS AND ANIMALS: CONSTRUCTING AGRICULTURAL BUILDINGS FROM STONE IN MEDIEVAL BRITAIN**

Abstract author(s): Berryman, Duncan (Queen’s University Belfast)

Abstract format: Oral

The majority of medieval buildings that we see today are constructed from stone. This is a bias in survival, as timber was by far the most common construction material within medieval farmyards. Stone buildings were many times more expensive than their timber counterparts and took longer to construct, due to additional labour to quarry and transport the material. However, there were evidently many lords who decided to invest in stone buildings rather than timber. This paper will investigate the factors behind the choices of materials and why lords might decide to build in masonry. Castles and churches reveal little in this context, thus this paper shall focus on the manorial buildings of Britain and Ireland, particularly the agricultural buildings. Agricultural buildings were essential for the production of food and thus the survival of societies; therefore the archaeology of these buildings can tell us much about these societies and the social importance of those who ordered the construction of the farms.

8 **STONE RULERS: STYLISTIC VARIATIONS IN VERONA’S SCALIGER TOMBS**

Abstract author(s): Reid, Aisling (Queen’s University Belfast)

Abstract format: Oral

This paper explores the Scaliger tombs situated outside the church of Santa Maria Antica in Verona. Surrounded by ornate railings, the mausoleum contains the tombs of the celebrated Della Scala family, who ruled the region during the thirteenth and fourteenth centuries. The earliest tombs on the site typically replicate the stylistic conventions of medieval royal tombs, which were often carved from porphyry, as is seen, for example, in the red sarcophagus of Theoderic (c. 454-526) in Ravenna, or indeed the tomb of Roger II (1095-1154) in the Cathedral of Palermo. The Della Scala tombs of Cangrande I (1291-1329), Mastino II (1308-51) and Cansignorio (1340-75), however, are entirely different to their predecessors. Monumental in size and striking in their gothic complexity, they indicate a seismic shift in funerary culture. Built after the 1348 black death, the tombs are also sculptural testaments to changes in the way death itself was conceptualised in post-plague Verona. All three monuments feature two large, individualised representations of the deceased person, in contrast to the relatively anonymous tombs of their forbears. In each case, the lower register features a body prone on a catafalque, counterposed by an armed, lively equestrian figure above. Extending the research of Erwin Panofsky, Fernanda da Maffei and Mauro Cova, among others, I consider how and why such stylistic changes occurred. I argue that variations in the later monuments stem partly from anxieties surrounding legitimacy of the Scala rule, which was frequently challenged. Positioned high up, the three horsemen are seated like warrior saints who survey their territory and eternally preserve in stone the post mortem reign of the deceased. They enact a stone resurrection of the defunct person below and in doing so, they undermine the boundary between the living and the dead to permanently preserve the Della Scala rule.

9 **THE EVOLUTION OF STONE-LINED GRAVES: AN EARLY MEDIEVAL IRISH PERSPECTIVE**

Abstract author(s): Richardson, Clair (Queen’s University Belfast)

Abstract format: Oral

The study of funerary remains in first-millennium AD Ireland has been transformed in recent years through the discovery and excavation of a wide range of cemeteries, large-scale dating programmes, and major synthesis of funerary data (e.g., Mapping Death Project). There is now considerable scope for fine-grained analysis of burial data, to understand the complexity and development of burial rites through time.

This paper presents preliminary data from research which suggests potential for developmental change in stone-lined graves from 'rough-hewn', sub-angular stone-lined graves to slab-lined graves around the 6th century AD in Ireland. The most common burial furnishing in early medieval Ireland was that of stone or slab linings (often with lintels). Two separate categories of stone-linings are analysed; rough-hewn, sub-angular, rounded stones placed around the circumference of the graves and slab-lined graves with or without a lintel top and paved floor.

A sample of 78 radiocarbon dates from human remains, excavated from slab-lined and rough-hewn stone-lined graves are analysed. These suggest that, although there is an overlap around the 6th century, rough-hewn stone-lined graves are often earlier in date than slab-lined, often lintelled, graves indicating a growing preference for more elaborate encasements of the human body. The potential for this data to illuminate changing fashions/traditions, a move from ancestral burial grounds to larger cemeteries, and processes of Christianisation are analysed.

10 HOW AND WHY WERE STONES CONCEPTUALISED IN MEDIEVAL RELIQUARIES IN THE MIDDLE AGES?

Abstract author(s): Robinson, Ashleigh (Queen's University Belfast)

Abstract format: Oral

In this paper, I explore medieval thinking about crystals and stones. More specifically, I analyse a bejewelled reliquary Arm of Saint Patrick currently on loan to Ulster Museum in Belfast, which originally would have contained a relic of the saint.

I demonstrate that each stone that decorates the reliquary represents a different purpose and meaning in relation to the Shrine of Saint Patrick. Currently, there is a lack of research into these stones and it is this gap in knowledge that I hope to fill.

Drawing partly on medieval texts like *The Aberdeen Bestiary* and *The Etymologies of Isidore of Seville*, for example, which both feature stones, I consider how and why stone decorations were an important part of medieval reliquaries like the one in Ulster Museum. Drawing partly on Jane Bennett's theory of vibrant materialism, as well as Bruno Latour's Actor-Network theory, I demonstrate that the stones in reliquaries of these types are not simply decorative but were also believed to impact their surroundings.

I initially analyse the formal qualities of the Arm before considering how it might have functioned in its original context. Authors like German Dominican friar and theologian Albertus Magnus (1200-1280), as well as the respected poet Marbod of Rennes (1035-1123) first recognised the significance of stones. Finally, I show that Arm reveals much about medieval thinking on stone, especially within devotional contexts.

11 „DUBBED WYTH FUL DERE STONES“: THE LIVELINESS OF STONE IN ‚SIR GAWAIN AND THE GREEN KNIGHT‘

Abstract author(s): Lundy, Niamh (Queen's University Belfast)

Abstract format: Oral

This project will examine stone in the celebrated medieval poem, ‚Sir Gawain and the Green Knight‘. Stone is a key motif in the text; it is replete with stony mountain-scapes, gems and rocks.

I argue that ‚Sir Gawain and the Green Knight‘ reveals much about medieval understandings of stone, which evidently was not simply a lifeless resource to be manipulated for humanity's profit, but a fundamental aspect of the natural world which held in it histories, experience and understanding.

The Green Knight is presented as a fantastical stone-like creature himself; he is half-man and half-mountain. As nature personified, he encourages the reader to reflect on their own insignificance when compared with the formidable power of the world.

Drawing partly on eco-theorists like James Lovelock, as well as the materialist approaches of Jane Bennett, I suggest here that there is much that we might learn from this text; by thinking more carefully about nature, it encourages us to develop a more positive relationship with our surroundings and indeed the earth under our feet. Such thinking is more important now than ever, given the current climate crisis we are living through after centuries of desecrating the earth.

12 SET IN STONE: LIVING STONE IN CHAUCER'S ‚FRANKLIN'S TALE‘

Abstract author(s): Alarcon, Laura (Queen's University Belfast)

Abstract format: Oral

In Chaucer's ‚Franklin's Tale‘, medieval stone plays a pivotal role; it is conceptualised not as a static body but instead demonstrates independent agency that allows it to move and exert power as if it were a living being. This paper will investigate the apparent liveliness of medieval stone and enrich current understandings of it by exploring the complex ways in which it features in literature of the period.

Much like Chaucer's literature, which clearly demonstrates the vital qualities of stone and these concepts, Jeffrey Cohen's cultural study of stone similarly highlights its complexity, focusing on its force and soul as understood in the Middle Ages. So too, Jane Bennett's theory of vibrant matter asserts that all matter might be conceived as 'vital' or 'alive', rather than a static entity; in this regard, her ideas reiterate the approach to stone apparent in Chaucer's Tales. This paper will further develop research into medieval stone by reading it in relation to recent critical theory of this type.

The paper broadly situates Chaucer's depiction of stony landscapes in relation to wider medieval thinking about stone. It then turns to critically engage with Jane Bennett's work.

To conclude, the paper will argue for more research on medieval stone as a means to rethink how we understand the natural world around us and overcome the problems of the anthropocene.

13 **LIVING STONE: EXPLORING THE VITALITY OF STONE IN THE ABERDEEN BESTIARY**

Abstract author(s): Nelson, Amy (Queen's University Belfast)

Abstract format: Oral

In the Aberdeen Bestiary, the anonymous author tells of two fire-bearing stones, one male and one female, which reside on top of a mountain. Such is their nature that when the female draws near the male a fire is kindled and the mountain and its surroundings are set alight (fol. 94r). The tale of the fire-bearing stones reveals how the lithic possessed a transformative and potentially destructive kind of agency in the middle ages. In this essay, I propose that stones were conceived as innately lively in medieval thought – used as building materials, healing talismans, for allegory-making and even in magical rituals – stones played an important role in medieval life. I employ the Aberdeen Bestiary as a touchstone from which to explore the medieval conception of the lithic. By including gemstones such as topaz, sapphire and jasper in their classificatory project, lapidary texts, encyclopaedias, and bestiaries elevated stone to almost living status. Recent studies on non-human things and objects have examined the efficacy inherent in stone. Political theorist Jane Bennet argues that inert matter wields a vibrant materiality while medievalist Jeffery Jerome Cohen excavates the wealth of stories on stone to consider its aeonic companionship with man. Indeed, as the material of our first weapons and most lasting structures, stone brings the past and present into intimate proximity. Thinking geologically allows us to look beyond anthropocentricity. By revisiting the vitality of stone in the middle ages, we can renew contemporary conversations on stone and ultimately liberate the lithic from stony silence.

14 **"GIMMAS" AS EMBODIMENTS OF VITALITY IN EARLY-MEDIEVAL ENGLAND**

Abstract author(s): Walsh, Ciarán (Queen's University Belfast)

Abstract format: Oral

In many of the Anglo-Norman romance narratives of the later Middle Ages there was an obvious link between gemstones and "vitality" – the quality which distinguishes living beings from inanimate objects. In these poems – such as *Le Roman d'Éneas* and *Le Roman de Troie* – gemstones appear in close proximity to animated automata, as well as in tombs, as a means of preserving the body, and in spaces set aside for physical recuperation. In the later Middle Ages gemstones were more than merely precious, exotic and luxurious objects – at least in the allegorical world of romance literature, they were treated as objects that were, though not themselves necessarily alive, vessels for vitality.

Gemstones also appear frequently in texts from early Medieval England, both in English and Latin. They appear in travellers tales, hagiography, poetry and lapidary texts. Despite their prevalence, however, their significance in relation to the concept of vitality – Old English "feorh" – has never been fully explored. This presentation will therefore investigate the connection between gemstones and vitality in early-medieval English sources, a connection which differs in many important ways from the highly-symbolic treatment of gemstones found in later-medieval texts.

Integrating aspects of archaeological theories such as Malafouris' Material Engagement Theory this presentation will be more conscious of the material nature of stone than a traditional literary analysis. By understanding the physical properties of gemstones – including properties mistakenly attributed to them in the early Middle Ages – I will demonstrate how gemstones, literary or physical, were used as conceptual tools rather than straightforward allegories. This will provide a new perspective on how the Anglo-Saxons conceptualised vitality as a quality separate from mind, body and soul but, nevertheless, associated with physical objects and properties – especially the ability to emit heat and light.

15 REENCHANTING THE ROCKY LANDSCAPE: MEDIEVAL MAGIC IN THE GHOST STORIES OF M.R. JAMES

Abstract author(s): Mitchell, Victoria (Department of English, Queen's University Belfast)

Abstract format: Oral

What is the „archaeological uncanny“? Specifically, why is excavation both revelatory and unsettlingly familiar? According to Gabriel Moshenska, the answers to these Freudian questions are problematised in the ghost stories of M.R. James, a “young Victorian archaeologist” who later turned to writing antiquarian tales of spectral hauntings. James’ translation of *Twelve Medieval Ghost Stories* (which depicts a series of shape-shifting spectres), and magician John Dee’s *Diary*, illustrate his interest in medieval culture and the numinous potential of all matter. Focusing on two texts, *Oh Whistle and I’ll Come To You My Lad* and *A Warning To The Curious*, this paper draws on Jane Bennet’s theory of vibrant matter, as well as Jeremy Cohen’s exploration of „uncanny stone“, to argue that James views the landscape as having a destructive agency that seems to reiterate medieval thinking about the vital qualities of stone. At a time of unprecedented Anthropocene unburials via volcanic eruption and rising sea levels, the Jamesian landscape provides a timeless reminder that man cannot control the elemental forces that exist beneath his feet.

16 MACHEN, VIBRANT MATTER, AND PROTESTANT ANXIETY

Abstract author(s): Bresland, Daniel (Queen's University Belfast)

Abstract format: Oral

This paper explores stone in the work of Arthur Machen, by closely reading his short story, ‘The Inmost Light,’ from *The House of Souls* (1894). The story features a scientist who traps his wife’s soul inside a stone, only for a non-human force to inhabit her body. It reveals much about Machen’s conception of the material universe and its apparent ‘lively qualities’.

This paper situates Machen’s depiction of stone within the wider context of medieval thinking about the agency of matter. I demonstrate that the agency Machen attributes to stone reiterates medieval thinking about the numinous world and is therefore at odds with his Protestantism, causing him anxiety. Clearly, Machen’s horror at the prospect of ‘vibrant matter’ stems from his Anglican background.

I draw on a range of Machen scholarship, including Deborah Bridle’s work on Machen’s fictional portrayal of the occult, as well as Gabriel Lovatt’s thinking on ‘The Inmost Light’ and Cartesian Dualism. I demonstrate that Machen seeks to explore preconceptions about matter.

Combining Machen scholarship with Jane Bennett’s ideas in *Vibrant Matter*, as well as Caroline Walker Bynum’s research into *Christian Materiality*, this paper fills a gap in research into the historical thinking about stone as it appears in ‘The Inmost Light’. In this regard, I highlight Protestant anxieties regarding matter in the Victorian age.

17 MILLSTONE GRIT AND KENTISH RAG: MEDIEVAL STONE IN 1970S TELEVISION

Abstract author(s): Wallace, Craig (Queen's University Belfast)

Abstract format: Oral

This paper will analyze the depiction of stone in *Red Shift* (1978) a BBC Play For Today adapted from Alan Garner’s novel, and the television ghost story *The Stone Tape* (1972), written by Nigel Kneale. In *Red Shift*, protagonists from the Roman occupation of Britain, the English Civil War, and from the 1970s experience the landscape around Mow Cop in Cheshire as contemporaries. There is no sense of chronological distance between them. Stone buildings and artifacts weave and pleat through layers of time. The millstone grit is quarried to build the cottages inhabited by generations of people who occupy the landscape, as well as a folly castle, an anachronism built to look like a medieval ruin. The stone is a figure for the complex conceptualization of time in the text, an archaeological imagination in which past, present and future are perceived simultaneously. A 3500-year-old stone artifact also connects the protagonists, interred and excavated on the site. The characters who share the landscape across generations experience ghostly visions of stone buildings yet to be built. In the ghost story *The Stone Tape*, the haunted house is built on the foundations of an older building, reusing the stone. Spectral visions are stored in the stone and played back on a loop, projected out from the material, like a recording medium. Translucent spectres appear against the stone screen. The stone is Kentish rag, a sort of greensand “quarried since Roman times”. It is suggested that since most of “medieval London was built of this stuff”, it might “explain a lot of ghost stories”. Again, there is an archaeological imagination, with deeper layers of stone containing older recordings. The reuse of earlier stone as a building material in an archaeologically layered landscape is a figure in these texts for a multidimensional conceptualization of time.

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Findlater, Judith (Queen's University Belfast) - Beglane, Fiona (Atlantic Technological University, Sligo) - Montgomery, Ryan (Queen's University Belfast)

Session format: Regular session

Animals are essential to humans in providing food, traction, companionship, and secondary products such as dairy products, wool, hides and craft materials, as well as being significant indicators of status and identity. This session aims to demonstrate how multi-proxy approaches can be used to investigate different approaches to animal husbandry and/or the use of animal products.

The study of animal remains from archaeological contexts allows us to determine such factors as the species present in the ecosystem at the time, variances in livestock quantities, exploitation of wild species, as well as symbolic and socio-economic value to humans. Animal remains can also be utilised in scientific techniques to indicate dietary and mobility patterns that can provide comparative data for humans and can also inform on changes in husbandry methods and animal movements across landscapes and through time.

The session will bring together current research on human-animal interactions and provide an opportunity to gather a range of perspectives from various European countries and chronological periods. Papers are invited that utilise a multiproxy approach to answering zooarchaeological questions. This may include but is not limited to palaeoenvironmental, artefactual, isotopic, proteomic, and aDNA studies. It is hoped that these will demonstrate how zooarchaeology can shed light on the diversity of past human societies and the varying roles of animals within these.

ABSTRACTS

1 LATE PLEISTOCENE PALAEOENVIRONMENTS OF THE VÂRGHÎȘ GORGES AREA (EASTERN CARPATHIANS, ROMANIA), BASED ON VERTEBRATE FAUNAS FOUND IN PALAEOLITHIC CAVE SITES

Abstract author(s): Vasile, Stefan (University of Bucharest; Emil Racoviță Institute of Speleology) - Petculescu, Alexandru (Emil Racoviță Institute of Speleology) - Dumitrașcu, Valentin (Vasile Pârvan Institute of Archaeology) - Robu, Marius (Emil Racoviță Institute of Speleology) - Cosac, Marian - Murătoreanu, George (Valahia University of Târgoviște) - Vereș, Daniel (Emil Racoviță Institute of Speleology)

Abstract format: Oral

The karst system of the Vârghiș Gorges (Perșani Mountains, Romania) includes numerous caves with well-preserved Upper Pleistocene sediment accumulations that yielded Middle Palaeolithic artefacts associated with fossil vertebrates. The large mammal remains show evidence of anthropic interaction, but appear to have mostly accumulated naturally, by carnivore activity. Megafaunal remains mostly belong to cave bears, ibexes, indeterminate large bovids, and wolves, with boar, horse, woolly rhino, red fox, or cave lion remains occurring rarely.

The small vertebrate remains are more abundant, and, therefore, statistically relevant, and offer more information on the Late Pleistocene local environments. The herpetofaunal assemblages include hylid and ranid frogs, lacertid lizards, and natricid and colubrid snakes. The identified taxa support the presence of forested areas, but also of open grasslands, in the vicinity of the gorges. These conclusions are further supported by the small mammal assemblages identified, which include 13 rodent and insectivore taxa. Some taxa (e.g., the common shrew, the bank vole) also prefer shrubberies or deciduous forests, whereas others (e.g., the common vole, the narrow-headed vole, the European hamster, the steppe lemming) inhabit grasslands. The occurrence of the snow vole shows that rocky terrain was also present, as was a permanent body of water, where water voles and marsh frogs lived.

Alongside radiocarbon and luminescence data, the small mammals also helped date the cave sedimentary successions as starting during the latest glacial interval (MIS3), and transitioning to postglacial times. The relative abundances calculated for several taxa (the common vole, the narrow-headed vole, the snow vole, and the common shrew) clearly identify one of the cooling intervals corresponding to the Last Glacial Maximum in the sedimentary succession.

Work supported by: University of Bucharest internal project 20188/2023 (Ș.V.); CNCS – UEFISCDI projects PN-III-P4-ID-PCE-2020-2282 (Ș.V.), and PN-III-P1-1.1-TE-2021-0187 (M.R.), and EEA-RO-NO2018 Grant #0126 (KARSTHIVES2 – Ș.V., A.P., M.R., D.V.).

2 THE EVOLUTION OF ANIMAL PALEOECONOMY IN THE COASTAL ENVIRONMENT. A CASE STUDY FOR THE HAMANGIA SITES (VITH-VTH MILLENNIA BC, ROMANIA)

Abstract author(s): Balasescu, Adrian (University of Bucharest, ArchaeoSciences Division; Institut of Archaeology, Romanian Academy) - Voinea, Valentina (National History and Archaeology Museum Constanța) - Radu, Valentin (University of Bucharest, ArchaeoSciences Division; National Museum of Romanian History)

Abstract format: Oral

Archaeological researches realized in the past few years for several Hamangia sites, located in Dobruja region (S-E Romania) such as Cheia, Techirghiol, Constanța, dated to the Eneolithic period has revealed a rich fauna represented mainly by domestic mammals, but wild mammals are also present, as well as a number of aquatic resources. Wild horses, seal and various species of dolphins are among the remains identified.

During this time span, the Black Sea level was rising due to marine transgression and coastal line is constantly evolving. Also due to the tectonic movements and a more pronounced sinking of the continental shelf at the end of this millennium, the prehistoric coastal settlements were flooded and abandoned.

This presentation explore the evolution on animal paleoeconomy during this period affected by major costal transformations. Hamangia agro-pastoral communities based on animal husbandry make trips to the Dobrogea region to find the best pastures. Isotopic analysis has revealed that the herds were moving right to the sea shore for consumption of mineral-rich coastal plants.

After 4500 BC the increase of the Black Sea level has, consequently, the formation of the marine lagoon areas starting from south to north and flooding of coastal wetlands. There is now a growing interest in exploiting marine resources, but adapting to the new constraints of these ever-changing conditions does not seem to be enough. Gradually, the Hamangia communities are assimilated by the graphite ceramic communities, coming from the south of the Balkan Peninsula, much more adapted and for which the animal resources of the environment are an important part of their subsistence strategies. From this cultural symbiosis, the cultural complex Gumelnita - Karanovo VI was born.

This work was supported by a grant from the Romanian Ministry of Education and Research, CNCS-UEFISCDI, project number PN-III-P4-ID-PCE-2020-2369.

3 MULTI-PROXY EXPLORATION OF MIDDLE BRONZE AGE ANIMAL HUSBANDRY AT THE EDGE OF THE FENS, LINCOLNSHIRE, ENGLAND

Abstract author(s): Osborne, David (University of Nottingham)

Abstract format: Oral

Domesticated animals were an important part of prehistoric communities and analysis of their remains can cast light on their movement as part of their husbandry as well as offering a proxy for the day-to-day mobility of their human companions. A study of these mobilities helps to reanimate our understanding of life in past societies and how they made use of resources in the landscapes in which they lived.

This paper discusses the mobility of animals at smaller scales of both temporality and distance and seeks evidence of seasonal movements for grazing. From a study area in Lincolnshire and the Fens in eastern England, bones and teeth of cattle, sheep and pigs were obtained from two sites excavated in advance of development. These represent two different types of grazing, with one site near Lincoln being a more inland, freshwater environment, while that near Langtoft was close to the fen-edge and the area subject to marine incursions in prehistory. Isotope analysis of carbon, nitrogen and sulphur in bones and teeth is used to explore the differences in the grazing environments at these two locations in the Middle Bronze Age and the potential use of the fen salt marshes as a seasonal resource. The isotope analysis is complemented by X-ray Fluorescence spectrometry (XRF) analysis of soil samples taken across enclosures and a possible droveway at the fen-edge, to investigate their use in the penning and movement of animals along the droveway to and from the fen saltmarshes.

By combining the different insights offered by isotope and XRF analyses, a picture should emerge from this research of the small-scale movements that were part of Bronze Age daily and seasonal life and animal husbandry on the fen-edge.

4 THE ROLE OF ANIMALS IN THE LATE BRONZE AGE AT BRINJEVA GORA ABOVE ZREČE

Abstract author(s): Leskovar, Tamara (Centre for interdisciplinary Research in Archaeology, Department of Archaeology, Faculty of Arts, University of Ljubljana) - Toškan, Borut (Research Centre of the Slovenian Academy of Science and Arts, Archaeological Institute) - Omahen Gruškovnjak, Manca (Museum of Gorenjska) - Črešnar, Matija (Centre for interdisciplinary Research in Archaeology, Department of Archaeology, Faculty of Arts, University of Ljubljana; Institute for Protection of Cultural Heritage of Slovenia) - Potočnik, Doris - Ogrinc, Nives (Department of Environmental Sciences, Jožef Stefan Institute) - Gerritzen, Carina (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel) - Goderis, Steven (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel) - Snoeck, Christophe (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel)

Abstract format: Oral

Brinjeva gora above Zreče is a multi-period (fortified) hilltop settlement, most intensively inhabited in the Late Bronze Age (Ha A/Ha B) and in the Roman period. It is associated by three cemeteries, two of which are of interest to us, namely a Middle Bronze Age (Bd B) burial mound with five inhumation graves and a Late Bronze Age (Ha A/Ha B) with 78 cremation graves. Excavations in the various parts of the complex lasted over a decade and yielded important findings, especially about the Late Prehistory of the wider area. They yielded, among other archaeological finds, human and animal remains. The latter are mainly from the settlement, while the human skeletal remains come from the above-mentioned cemeteries.

By combining macroscopic, microscopic and isotopic analyses of human and animal remains, we investigate the role of (various) animals in the diet, mobility, and economy of the Late Bronze Age population inhabiting the area. First, macroscopic and microscopic analyses of the human and animal skeletal remains were performed. A biological profile was established for human individuals. Based on the animal remains, the occurrence of different animal species and the age at death of each animal were determined. Macroscopic and microscopic analyses were followed by isotopic analyses (C, N, O, and Sr). Additionally, plants (trees, shrubs, and grasses) were collected from the geologically colourful surroundings for Sr baseline. The obtained results were combined in order to better understand the demography of the population, husbandry practices, and the use of animal products in everyday life of prehistoric Brinjeva gora above Zreče.

5 DIVERSITY IN THE BIG MUD MEADOW (OR NAGY SÁRRÉT): COMPARING ANIMAL HUSBANDRY AT BRONZE AGE OTOMANI SETTLEMENTS

Abstract author(s): Duffy, Paul R. (Cluster of Excellence Roots, Christian-Albrechts-Universität zu Kiel) - Györgyi, Páritka (University of Michigan) - Bartosiewicz, László (Stockholm University)

Abstract format: Oral

Archaeologists focused on the Middle Bronze Age of the Great Hungarian Plain often claim that population aggregation at tell sites meant they were important nodes on the landscape focused of trade, ritual, and legitimization of social hierarchy. Although the social significance of tell sites remains debated, the size of populations at these settlements undoubtedly often ran into the hundreds, requiring different and sometimes more complex organization of farming schedules than approaches that dominated in the Neolithic. In this paper, we compare animal and plant isotopic data from the Bronze Age tell site of Vésztő-Mágor and the nearby open settlement of Tarhos-Gyepesi-Átkelő. With 7 m of stratified deposit, the tell settlement of Vésztő-Mágor, dating from the Middle Neolithic to the Middle Bronze Age, is the highest tell site east of the Danube in the Carpathian Basin. Nearby, the site of Tarhos-Gyepesi- Átkelő is a small Middle Bronze Age farmstead, where excavations exposed a burned wattle and daub structure. Focusing on the Middle Bronze Age we compare faunal assemblages and nitrogen and carbon data from animal remains to identify differences in household herding economies at the two sites within a detailed radiocarbon chronology.

6 NEW PASTURES: LIVESTOCK AND LIFEWAYS IN IRON AGE IRELAND

Abstract author(s): de Groene, Donna (Department of Archaeology, University College Cork) - Hamilton, Derek (Scottish Universities Environmental Research Centre, University of Glasgow) - Crabtree, Pam (Institute for the Study of the Ancient World, Medieval Studies and Kevorkian Center, New York University) - Garrett, Zenobie (Department of History, University of Limerick) - Johnston, Susan (Department of Anthropology, George Washington University) - Crowley-Champoux, Erin (Department of Geography-Anthropology, University of Southern Maine) - Cleary, Kerri (Archaeological Consultancy Services Unit) - Long, Trish - Troy, Carmelita (Rubicon Heritage) - Becker, Katharina (Department of Archaeology, University College Cork)

Abstract format: Oral

The Irish Iron Age (ca. 700 BC–AD 400) has been one of the most enigmatic periods within Irish Archaeology due in large part to a lack of settlement evidence, which – when combined with the dominance of herbivore bone assemblages and horse tack in the archaeological record – was thought to indicate highly mobile pastoral lifeways. Large-scale excavation programs of recent years and the widespread application of radiocarbon dating has led to Iron Age settlement sites becoming recognized more widely. The idea that people were non-sedentary has been challenged, but, little is still known about subsistence practices and settlement modes.

Excavations at the exceptional ‘Royal sites’ of Tara, Co. Meath, Dún Ailinne, Co. Kildare and Navan, Co. Armagh produced cattle, sheep/goat, pigs and horse remains.. Although discussions of animal husbandry practices were, for a long time, limited to these assemblages, there has been an understanding they may not represent regular settlement practices. The more recently excavated sites provide the broader context necessary for understanding these assemblages and will allow the development of more robust models of animal husbandry and mobility – animal and human – in Iron Age society.

New Pastures, funded by the Irish Research Council (COALESCE/2022/1717) will assess evidence for animal husbandry in Iron Age Ireland from the published and grey literature, and integrate zooarchaeological, isotopic and aDNA analysis to shed new light on animal management in the Irish Iron Age, as well settlement modes and patterns of mobility. By using domestic animals as a proxy for human mobility patterns, the outcomes will provide insights into the movements and connections of people in the Iron Age, building data-based models for Iron Age lifeways.

This paper will present the project design, as well as the results of the initial phase of data collection and analysis of this project.

7 SHARED IDENTITIES OR OBJECTIFIED COMMODITIES? ATTITUDES TOWARDS DOMESTIC LIVESTOCK IN THE IRON AGE AND ROMAN PERIODS

Abstract author(s): Stallibrass, Sue (University of Liverpool)

Abstract format: Oral

During the Roman period there were enhanced developments of towns and market economies and, in some regions, the imposition of large numbers of professional military personnel. Most of the civilian population continued to live and farm in rural areas, inhabiting landscapes that they had shared for generations with people, animals, plants and beliefs. Individuals (of any species) were known in person or by repute. In contrast, some urban dwellers and most of the military personnel were dependent on other people to produce animal resources. Many were not familiar with sentient domestic livestock on a daily or life-long basis, only encountering them post-mortem as processed commodities. Were these different lifestyles associated with different perspectives regarding animal identities: eg as intimate kin or objectified commodities?

Archaeologists pay particular attention to burials or associated bone groups when attempting to study the individuality of specific dead animals. Often, these are companion species such as horses and dogs. But by far the most common companions to rural populations were domestic livestock ie cattle, sheep/goats and pigs. Their bones are usually recovered as dispersed, broken remains, making it much harder to investigate an individual animal’s identity and biography.

This holistic paper considers a range of types of evidence and ways of thinking to discuss how individual domestic livestock related to people’s daily lives, kinship groups, economies and philosophical world views.

It considers data from ethnographic studies, behavioural science, and economic and political history to argue that rural communities recognised multi-species identities, whilst military organisations had very different views regarding domestic livestock.

It suggests how material evidence from archaeozoology, landscape archaeology, settlement structures, geoarchaeology and biomolecular studies can be used to investigate this hypothesis.

8 **THIG AIR MO CHÙLAIBH: AN INVESTIGATION INTO THE ROLE OF DOGS FROM PREHISTORIC TO MEDIEVAL IRELAND**

Abstract author(s): Montgomery, Ryan (Queens's University Belfast)

Abstract format: Oral

Dogs feature richly in Irish legend and history and are commonly found in an archaeological context; with the earliest confirmed canine remains in Ireland dating to the Mesolithic Period. Little is known about the role of dogs in Irish society, however, or how this may have changed over time. To answer this question, this study uses a multi-proxy approach by comparing osteological and contextual evidence with an isotopic study. Focussing on the prehistoric sites of Haughey's Fort, Co. Armagh and Medieval Carrickfergus, Co. Antrim, osteological examination, and isotopic sampling will offer an insight into the condition, diet, and mobility of the dogs from these sites. Supplementing this data, a review of published reports and grey literature from throughout Ireland provides a more complete overview of the perception of dogs in Ireland across various periods and sites and how this manifested into the various roles inhabited by canines and their place in Irish society.

9 **HAND IN PAW: THE RELATIONSHIP BETWEEN DOGS AND HUMANS WITHIN A ROMAN RITUAL SHAFT IN SURREY, ENGLAND**

Abstract author(s): Green, Ellen (University of Reading)

Abstract format: Oral

The ways in which bodies, both human and animal, are treated after death provides us with an important window into past attitudes, beliefs and practices. Despite human and animal remains often being found together within a variety of structured deposits from Roman Britain, few studies have directly compared the treatment of bodies. This is most likely due to discrepancies between the methods used to record animal and human remains, which can make direct comparison challenging. However, within comingled disarticulated deposits, such comparisons can often be the best way to understand the role of each species within the acts through which the deposit was formed. This study uses a first century AD quarry shaft in Ewell, Surrey, England as a case study to show the potential of such mixed analysis. The shaft contained the comingled, disarticulated remains of 91 dogs and 20 humans within four basal deposits. Using a variety of taphonomic and palaeopathological methodologies in order to reconstruct how the bodies, both human and canine, were treated after death, this study was able to show evidence of curation and post mortem manipulation of both, ranging from potential defleshing to the removal of skulls. The similarities and differences between how humans, dogs and other animals within the deposit were treated can help illuminate the unique position of dogs within Roman Britain and what role they may have played within the rituals enacted at this site.

10 **FEEDING CARRICKFERGUS: THE USE OF MULTI-PROXY TECHNIQUES IN DETERMINING HOW THE MEDIEVAL TOWN OF CARRICKFERGUS, CO. ANTRIM, FED ITSELF**

Abstract author(s): Findlater, Judith (Queen's University Belfast)

Abstract format: Oral

This paper aims to show that by using various methodologies such as isotopic and proteomic analysis, zooarchaeology and historical record research, information of how the frontier port town of Carrickfergus, Co. Antrim fed itself throughout the medieval period can be ascertained.

The variance in the species represented through time will be shown as evidenced by the zooarchaeological data from faunal assemblages from the medieval layers of the town for the main domesticated animals of cattle, sheep, goats and pigs. It is known that it is difficult to distinguish between the bones of sheep and goat and the attempts made using a variety of methodologies, that included biometrics, morphological traits and proteomics will be shown that indicated the relative frequencies of the two species present. The results of the analyses and the implications recovered will be discussed.

Carbon and nitrogen isotope analysis to determine dietary indicators of the main domesticated animals mentioned above will be discussed. This analysis included the additional use of sulphur and strontium isotopic analysis on selected samples to determine potential mobility indicators. The data presented will provide information on the variances between the different species sampled as evidenced through the results obtained.

The use of historical record research will also be discussed that will highlight the value of including such material in conjunction with the study of zooarchaeology during the medieval period. Details of episodes of epizootics that would have affected animal husbandry, which subsequently would have had an impact on the social-economic values of the domesticated animals will be discussed in the paper.

The use of multi-proxy analysis in the research of the faunal assemblage material of Carrickfergus, Co. Antrim, provides a comprehensive picture of animal husbandry of the main domesticate species throughout the medieval period.

11 FOODWAYS IN POST-MEDIEVAL IRELAND REVEALED THROUGH ORGANIC RESIDUE ANALYSIS AND FAUNAL REMAINS

Abstract author(s): Dunne, Julie (University of Bristol) - Beglane, Fiona (Atlantic Technological University, Sligo) - Flavin, Susan (Trinity College, Dublin) - Evershed, Richard (University of Bristol)

Abstract format: Oral

Organic residue analysis is commonly used to investigate prehistoric vessels to determine diet, foodways and animal management strategies worldwide. The technique allows the differentiation between various foodstuffs, including non-ruminant and ruminant carcass fats, dairy, aquatic and plant products. However, it is less commonly used to explore historic period foodways and has never before been attempted on post-medieval pottery.

Here, we carried out a large-scale study of absorbed lipid residues from around 200 glazed and unglazed vessel forms, including cooking pots, olive jars, pipkins, baking/chafing dishes and storage jars. These were selected from a number of different domestic and elite sites across the island of Ireland, including Carrickmines Castle, Merchant's Road, Galway, Killeland, Carrickfergus, Naus and Dunboy, Cork. Preliminary results confirm a dominance of ruminant meat (cattle, sheep and goat) cooking in vessels, with dairying only taking place in meaningful quantities at Carrickmines Castle, notably confirmed by the large faunal assemblage.

12 REINDEER CASTRATION IN THE PAST AND PRESENT: TRADITIONAL KNOWLEDGE AND AN OSTEOLOGICAL TOOL TO TRACE HUMAN-REINDEER RELATIONSHIPS THROUGH TIME

Abstract author(s): van den Berg, Mathilde (University of Oulu)

Abstract format: Oral

One of the major questions in the study of human-animal relationships concerns the origins and transformations of reindeer breeding and herding systems of the many reindeer herding communities inhabiting the circumpolar North. Reindeer have been a source of livelihood and sustenance and have shaped the cultures of such communities for several thousands of years. Castrated reindeer have played and continue to play an invaluable role in reindeer herding communities; without castration, the domestication of the reindeer itself could never have taken place. Castration is important for reindeer taming, control, training, community ritual practices, food supply, and herd management. In particular, the practice of 'half castration' (where either part of the testicular duct or testicular gland is kept intact), which is unique to reindeer management, is an ingenious tool, having both roots in traditional indigenous land management and having critical economic, cultural, and practical implications. This presentation integrates biological, ethnographical, and archaeological data and analysis on reindeer castration and broader questions relating to reindeer domestication with a focus on Fennoscandia, where reindeer herding is traditionally practiced by the Sámi. This project 1) mapped the socio-economic, cultural, and historical relevance of reindeer castration among Sámi and Finnish reindeer herders in Fennoscandia, 2) created innovative osteological tools to document reindeer castration in the archaeological record, and 3) applied gained insights on ancient reindeer bone assemblages from Fennoscandia. The evidence of this practice within different contexts through time helps gain understanding of incipient and the transformation of human-reindeer domesticating relationships. Here I present the final results of this research project.

A. SMALL CARNIVORES BETWEEN HYENAS, BEARS AND HUMANS. THE UNIT 3 OF COVA DEL COLL VERDAGUER SITE (BARCELONA, IBERIAN PENINSULA)

Abstract author(s): Gabucio, Maria Joana (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili) - Sanz, Montserrat - Daura, Joan (Grup de Recerca del Quaternari - GRQ-SERP, Departament d'Història i Arqueologia, Universitat de Barcelona)

Abstract format: Poster

Zooarchaeological and palaeontological assemblages, especially those located in karstic cavities, are usually the product of the activity of several taphonomic accumulating agents. This is also the case of the Upper Pleistocene site of Cova del Coll Verdaguer (Barcelona, Iberian Peninsula), where hyenas accumulated most of the ungulates, bears used the cave to hibernate and for birthing cubs and humans occasionally visited the cave. The main aim of this study is to investigate the role played by small carnivores in the formation of Unit 3 (chamber Sala Sal de Llop). For this purpose, we analysed *Lynx pardinus* and *Vulpes vulpes* remains, on the one hand, and leporid remains, on the other, applying different taphonomic (breakage and surface modifications) zooarchaeological (skeletal parts frequencies, age at death) and spatial methods (GIS, geostatistics, refits). Regarding small carnivores, the results indicate a predominance of adult individuals, a fairly complete anatomical representation (especially in the lynx), the refitting of several elements (in the case of lynx, many of them clustered in the same area), and the presence of tooth marks in some remains. This last point shows that some carnivore bones were consumed by other carnivores, as their prey or as scavenged carcasses. Concerning leporids, all age categories are represented (adult individuals predominating), the most abundant elements are the coxae and those from the distal segment of the appendicular skeleton, and evidence

of carnivore damage has been identified in several remains. The combination of these analyses shows that the small carnivores did not play a merely passive role, but were also accumulators of leporid remains. In this way, this study will shed more light on the relationships between human groups and different carnivore taxa at Cova del Coll Verdaguer and, by extension, in the European Upper Pleistocene.

B. RATTUS: A MULTIPROXY STUDY OF HUMAN-RAT INTERACTIONS IN EUROPEAN HISTORY

Abstract author(s): Orton, David - Green, Eleanor - Feider, Michelle - Presslee, Sam (University of York) - Guiry, Eric (University of Leicester, UK) - Jenner, Mark - Holland, Pen - Wales, Nathan (University of York)

Abstract format: Poster

The black and brown rat are among the most globally successful commensal species, and the most significant for European history. Each has spread far beyond native ranges in Asia by colonising niches around human settlements, likely reaching Europe in the Iron Age and 18th century respectively. The resulting association with shifting patterns of human settlements and communications makes rats potentially valuable indicators for key archaeological questions of urbanism, migration, and trade – if we can understand the extent of their dependence on humans. At the same time, rats have profound impacts on human societies as food pests and agents of disease, most notoriously – if controversially – implicated in historic plague pandemics.

RATTUS is a 5-year project (2023-2027) aiming to chart the intertwined histories of rats and humans in Europe from late prehistoric origins to the 19th C. Although based firmly in zooarchaeology, the project applies a broad suite of complementary methods to address these interrelated themes:

- ZooMS collagen fingerprinting to confirm identifications and particularly to distinguish black rats from brown rats;
- direct radiocarbon dating to check and refine chronologies;
- ancient DNA to track dispersal routes and connections and to assess the impact of plague;
- stable isotopes to understand variations in dietary niches through time and between site types;
- analysis of early modern written sources to trace the spread of the brown rat and its impact on European black rat populations;
- ecological modelling to simulate dynamics of rat populations and their movements within human networks, drawing on each of the above.

This poster introduces the aims and scope of the project, showcases some first results, and outlines how the diverse methodological strands will be brought together.

C. BRINGING MACHINE LEARNING TO TAPHONOMY. IDENTIFYING CARNIVORE TOOTH MARKS IN BONE SURFACE WITH ML ALGORITHMS: CROCODILES AND WOLVES

Abstract author(s): Abellán Beltrán, Natalia (UNED; I.D.E.A. - Institute of Evolution in Africa)

Abstract format: Poster

Traditionally, the study of Bone Surface Modifications (BSM) has been done by classifying them systematically, which has produced very different results if done by one team of scientists or another. Tooth marks are a big part of BSM. They can be found in any archaeological assemblage and have been studied thoroughly during the past two decades. The importance of their well recognition is knowing what taphonomy calls “agency”, so that further interpretations about the origin of the archaeological site can be made. In previous studies, pits have proved themselves to be good tools to distinguish some carnivores from another’s (crocodile from felids, for example), but they fail when comparing animals from the same family order, which are much more similar.

In this sense, what has been never done is trying to discern among carnivores just by looking at scores. They have always been considered to be more variable, hence less useful.

In the present work, Machine Learning (ML) algorithms (CNNs) are used to compare crocodile and wolves tooth scores. The main goal is to spread the use of ML in Archaeology, as well as to test the limits of this new method, in an attempt to make our science much more objective, reducing to minimum the personal bias introduced by the investigator.

TEXTILES IN ARCHAEOLOGY, CONSERVATION, AND MUSEOLOGY: FINDING A WAY FORWARD THROUGH COLLABORATION

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Lukesova, Hana (The University Museum of Bergen) - Gleba, Margarita (Università degli Studi di Padova)

Session format: Workshop

Organised by the new EAA Community for Textile Archaeology and Conservation, the proposed workshop opens a discussion on the retrieval, study, conservation, and display of archaeological textiles in museums from the point of view of different disciplines: Archaeology, Conservation, and Museology. Even though it may seem striking, these disciplines often do not share the same aims. While archaeologists are looking for evidence, conservators aim to preserve it and museum curators want to make it understandable and accessible to a wider public. Looking for integrated solutions and a common language through examples of best practices in order to find a compromise acceptable to all stakeholders are the main goals of this workshop. The way to achieve them is through a comparison of practices in various European countries and raising ethical dilemmas that are often solved following local cultural traditions. At the same time, the workshop aims to explore and promote a conscious diversity instead of creating blind standardization based on discussing case studies concerning current practices and attitudes applied in the past.

Following this target, the workshop will be divided into five parts:

1. Brief presentations of various case studies from the past
2. Discussion of the past strategies
3. Brief presentations of various case studies from the present
4. Discussion of current strategies
5. Looking for the best practices for the future following the principle of diversity and sustainability through close collaboration of the stakeholders from the different disciplines involved.

We hope that the outcome of the workshop will be a white paper, which can be further developed in the future in partnership with specialists working on similar issues (other relevant EAA Communities, UNESCO, ICOMOS, ICOM-CC, E.C.C.O., etc.) to form a basis for future national and international practices.

However, online audience is welcome, only passive participation is possible.

ABSTRACTS

1 TEXTILE RESEARCH WITHIN THE REVERSEACTION PROJECT: UNIVERSITY AND MUSEUM IN PARTNERSHIP

Abstract author(s): Kwaspén, Anne (McDonald Institute - University of Cambridge) - Escobar Toro, Adriana (Museo del Oro - Colombia) - Martinon-Torres, Marcos (McDonald Institute - University of Cambridge)

Abstract format: Oral

How can complex technological systems to create luxury goods develop and be sustained in the absence of coercive political authorities? The REVERSEACTION project aims to answer this question by investigating art and technology from pre-Hispanic societies in Colombia. Textile artefacts are one of the key materials of this project, which will be analysed scientifically for information on their source(s), manufacturing techniques and life-histories. The objective is to investigate a wide range of archaeological textiles and production tools, with a view to integrating these data with other strands focused on metals, ceramics and lithics. For this purpose, a partnership has been established between the University of Cambridge and the Museo del Oro in Bogota, which holds the largest textile collection in Colombia, in addition to relevant expertise. In April 2023, a first working visit to the museum will take place during which textiles will be technically analysed, and samples will be taken for scientific analysis of the dyes and radiocarbon dating.

Based on the experience from the first few months of collaboration, this presentation will assess the challenges and potentials of archaeological textiles research in partnership with a major museum, and as part of a larger project going beyond textiles. Issues to be discussed will include research collaboration and knowledge exchange between specialists, constraints in sampling and contextual information.

2 **ARCHAEOLOGICAL TEXTILES FROM THE TREASURY OF THE NATIONAL MUSEUM OF THE HISTORY OF UKRAINE: PROBLEMS OF CONSERVATION, RESTORATION, EXHIBITING**

Abstract author(s): Velychko, Eugenia (National Museum of the History of Ukraine)

Abstract format: Oral

Unique textile fragments are stored in the Treasury of the National Museum of the History of Ukraine (former Museum of the historical Treasures of Ukraine), saving and exposing which is currently an important task. These are finds from Sokolova Mogyla, Mykolaiv region (silk, silk with golden thread embroidery, felt; dated the 1st century), Chugunno-Krepinka, Donetsk region (silk (?), leather, textile from the golden thread; dated 1st-2nd century), Church of the Tithes, Kyiv (silk with metal and glass decorations; dated the 13th century). Currently, all textiles require conservation. The main challenge is the choice of methods. All examples are unique combinations of different materials: bark (placed under the textile)-silk-golden threads, leather-silk-golden threads, or silk-metal-glass. In all cases, the difficulty in choosing a methodology lies in finding the right one for all materials in each combination. For some textiles, the situation is complicated by the restoration made in the 80s XXth, no documents about which have been preserved. Some examples had been filled with glue according to the old methods (such is the fate of, for example, unique silver thread textile). Naturally, it would like to determine whether it is reversible and whether it is possible to conduct additional research.

The issue of exhibiting these unique textiles is also essential. It should solve the problem of not only the most presentable display of textiles but also save in their original form for future generations.“

3 **HISTORICAL WOMEN'S DRESSES AND PROBLEMS OF RECONSTRUCTION**

Abstract author(s): Grupa, Malgorzata - Grupa, Dawid (Nicolaus Copernicus University)

Abstract format: Oral

In archaeological studies, women's silk dresses are a small percentage in relation to the much more frequently discovered remains of men's clothing or typical sack-like grave dresses. The state of preservation of women's dresses varies greatly. Sometimes they are preserved in such a way that they can be described in detail from the very beginning of the conservation work. Usually, these are dresses composed of many elements and the individual details have nothing to do with contemporary modelling. It is an art to be acquired by learning each element, how they are put together and the sizes associated with the width of the skirts worn on different types of petticoats. After conservation treatments, perhaps the most arduous work is to prepare the individual pieces of the dress for duplication. Here, each piece must be marked in such a way that, after several months of fabric conservation work (cleaning, disinfection, impregnation, stabilisation of impregnation processes), it can be placed in the correct place in the constructed gown.

These are usually combinations of five or even up to ten pieces in a single dress element. Only thoughtful handling and very detailed documentation allows for the correct juxtaposition of the whole. These are just some of the challenges with this type of work. They usually last about a year, but the end result is a fully reconstructed dress prepared for a museum exhibition. Gowns from archaeological excavations in Poland are unique finds that differ fundamentally from each other, not only in the details of the cut, but also in the embellishments, which are made of silk pasamons. They are a great repositories of knowledge about women's fashion in the 17th-19th

4 **HOW TO STUDY A TREASURE FROM A MUSEUM STOREROOM? AN ONLINE EXHIBITION AT THE NATIONAL MUSEUM OF DENMARK**

Abstract author(s): Mossakowska-Gaubert, Maria (University of Copenhagen)

Abstract format: Oral

My presentation will focus on the potential and limitations of the study of a museum's textile collection by archaeologists, historians, art historians and conservators.

The National Museum of Denmark (NMD) holds 112 textile fragments from Roman, Byzantine, and Early Medieval Arab Egypt. The collection was created during the period from 1886 to 1964, and four stages in acquisition of objects can be distinguished. All of textiles, with one exception, are in the museum's storeroom. The aim of the online exhibition "Archaeological Puzzles in a Museum: Egyptian Fabrics from the 1st Millennium AD at the National Museum of Denmark" is to give an insight into the history of the collection and the textiles therein. The exhibition is also an opportunity to present some of the problems a researcher encounters when trying to "reconstruct" the history of a collection. Investigations of the Copenhagen's textiles have among others uncovered some of the methods of textile analysis and documentation carried out in the past (e.g. M. Hald's studies made in the 1930s). In some cases, it has been possible to establish the approximate archaeological context from which they came (e.g. textiles from UCL, probably originated from Petrie's excavations). An important aspect of the research was to trace 'doublets', i.e. possible connections between fragments of the same fabric divided and dispersed in different collections, or coming from

different fabrics but woven in the same workshop or using same pattern-sheet (especially fabrics from R. Forrer). However, many questions could not be answered.

This exhibition is the result of a collective work conducted within the RECONTEXT research project (2021-2022). The project was funded by Louis-Hansens Fond and Beckett-Fonden and led by Maria Mossakowska-Gaubert. Hosted by the Centre for Textile Research, Saxo Institute, University of Copenhagen, RECONTEXT was conducted in close collaboration with the NMD.

45 INTERPRETING NEOLITHIC LIFEWAYS: THE IMPACT OF CURRENT THEORETICAL KNOWLEDGE AND MULTIDISCIPLINARY APPROACHES ON UNDERSTANDINGS OF NEOLITHIC EUROPE AND WESTERN ASIA

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Menemenli, Yasemin (Umeå University) - White, Lisa (Queen's University Belfast)

Session format: Regular session

Archaeologists often attempt to study Neolithisation solely in terms of subsistence mode and treat it as a 'package' that includes a linear transition to the domestication of crops and animals, and the appearance of settled lifestyles and technologically advanced materials. This 'package' is usually accompanied by the emergence of complex social organisation, population growth, and the development of cultural innovation. However, current scientific evidence from Western Asia and Europe indicates that Neolithisation occurred in a multiplicity of time, space, and place. Consequently, the need for a reconsideration of current scientific methodologies and theoretical understanding, alongside the application of multidisciplinary methods, is increasingly warranted. This includes the study of mortuary records, which play a fundamental role in understanding Neolithic lifeways by providing insights into the socio-economic, political and cultural dynamics of these communities. Information on population origins, genetic connections, dietary intake, population profiles, and chronologies of site use can all be derived from the scientific analysis of human remains, while investigations of funerary rites can reveal aspects of the world views and ideologies of these past people.

This session welcomes papers focussing on the following: -

- What does current scientific evidence tell us about Neolithisation processes in Western Asia and Europe?
- How can multidisciplinary studies, that integrate theoretical and methodological approaches, help us understand Neolithic lifeways in Europe and Western Asia?
- How can scientific techniques (e.g. isotopes, aDNA, radiocarbon dating GIS), and mortuary studies aid our understanding of early farming communities?

ABSTRACTS

1 DETERMINING DEATH: LIFE AND DEATH AT NEOLITHIC MILLIN BAY, CO. DOWN

Abstract author(s): White, Lisa (Queen's University Belfast)

Abstract format: Oral

The excavation of a Late Neolithic cairn at Millin Bay, Co. Down, in 1953, revealed a complex and unique megalithic structure, with some affinities to the Irish passage tomb tradition, yet unlike any other megalithic monument in Ireland. A feature of the unusual tomb was a 'long cist' containing human remains, art, and pottery linking the site to the great passage graves of Newgrange, Co. Meath, and Carrowkeel, Co. Sligo, highlighting the significance of the monument. The collection of human remains recovered from the cist comprised at least 14 individuals, representing the largest assemblage of Neolithic human remains in the north of Ireland. While an initial report on the skeletal material was provided by anatomists in the 1950's, this paper presents the results of a new study of the Millin Bay human bone assemblage utilising new scientific methods in bioarchaeology, including aDNA, multi-isotope analysis, radiocarbon dating and modern osteoarchaeological methodologies. Re-investigation of the human remains from Millin Bay has produced significant data pertaining to those buried within the tomb and has explored the nature of a suite of complex funerary rituals undertaken by the living, including the acts of dismembering, defleshing, and burning of their dead. Millin Bay is an unusual site which has provided a unique insight into death in prehistoric Ireland and helped inform our understanding of how the site is considered within the wider narrative of Neolithic Ireland and Europe.

2 INTERPRETATIONS OF EARLY NEOLITHIC LIFEWAYS IN BRITAIN: NEW INSIGHTS FROM STABLE ISOTOPE ANALYSIS OF INCREMENTAL DENTINE

Abstract author(s): Ostrum, Brett (Department of Archaeology, Durham University) - Gröcke, Darren (Department of Earth Sciences, Durham University) - Scarre, Chris (Department of Archaeology, Durham University) - Fowler, Chris (School of History, Classics and Archaeology, Newcastle University) - Cummings, Vicki (School of Natural Sciences, University of Central Lancashire) - Montgomery, Janet (Department of Archaeology, Durham University)

Abstract format: Oral

Isotopic studies have greatly advanced our understanding of Early Neolithic lifeways in Britain (c. 4000–3400 BC) over the last few decades, especially in regards to reconstructing typical dietary practices and residential mobility patterns. Other factors that may have influenced a person's lifestyle within their community, however, such as age, biological sex, and health status, have been discussed very little in relation to the isotopic data. This is partially due to the nature of skeletal assemblages from this period, as many Early Neolithic mortuary monuments in Britain were used as communal burial sites, with the remains of individuals becoming disarticulated, fragmented, and comingled over time. This has made it difficult to employ standard osteological methods that are based on the (mostly) complete skeleton for many of these assemblages, including using a life course approach. Stable isotope analysis of incremental tooth dentine, however, can provide information about a past individual's diet and mobility patterns over many years, and may reveal short-term changes in diet, mobility, and health status from early childhood through to young adulthood depending on the specific teeth analysed. Here, we will discuss how isotopic data from incremental dentine can be used to reconstruct individual life histories to further our understanding of Early Neolithic farming communities in Britain. Stable carbon, nitrogen, and sulphur isotope results from incremental dentine will be presented from several sites. In addition to characterising the typical diet and mobility patterns of each individual analysed during their early life, this technique also enables us to look for similar patterns among individuals from the same group that may be related to sociocultural aspects of age. Comparison of results from sites in different geographic areas also provides an opportunity to discuss potential indications of regional variation in early agricultural lifestyles within the isotopic data.

3 RECONSTRUCTING LATE NEOLITHIC LIFEWAYS USING MULTI-ISOTOPE ANALYSES OF HUMAN ENAMEL, DENTINE, AND BONE FROM THE LEGAIRE SUR MEGALITHIC GRAVE, SPAIN

Abstract author(s): Griffith, Jacob (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel) - Cheung, Christina (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel; Department of Anthropology, Chinese University of Hong Kong) - James, Hannah - Veselka, Barbara (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel) - Ordoño, Javier (Department of Archaeology and New Technologies, Arkikus) - Spros, Rachèl (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel) - Fernández-Crespo, Teresa (Departamento de Prehistoria, Arqueología, Antropología Social y Ciencias y Técnicas Historiográficas, Universidad de Valladolid; Research Laboratory for Archaeology and the History of Art, School of Archaeology, University of Oxford) - Snoeck, Christophe (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel)

Abstract format: Oral

Isotopic analyses have cemented themselves as important tools for reconstructing the lifeways of prehistoric people. In recent years, the development of multi-tissue and incremental sampling, alongside multi-isotope approaches means that we can now recreate these lifeways in greater detail than ever before. Instead of representing individuals with one sample, multi-sampling can track the intricacies of how diet and mobility may change over a lifetime. This has been paramount to understand the prehistoric way of life, as, we can now recreate age-related changes in diet and mobility, as well as certain anthropological behaviours (i.e., weaning practices), which were previously unobservable without a written record.

The study presented here combined the use of multi-tissue sampling (bone collagen, tooth enamel, and tooth dentine) with incremental sampling, in order to track age-related changes in multi-isotope proxies (C, N, O, Sr) within 19 Neolithic individuals from the Legaire Sur megalithic grave, Álava, Spain (ca. 3400–2300 BC). The aim was to reconstruct diet and mobility histories of the people who occupied Legaire at that time to the highest resolution physically possible. To reconstruct dietary lifeways, our approach combined the incremental dentine sampling of 19

permanent molars alongside 18 bulk bone collagen samples. The results allowed us to model not only complex age-related changes in diet, but also the varying breastfeeding strategies implemented at Neolithic and Copper Age Legaire. Further, mobility lifeways were demonstrated through the tracking of O and Sr isotope variations from the enamel of serially forming molars (M1, M2, & M3). These results indicated a varying level of geographical mobility, dependant on individual. For the first time, we present these integrated dietary and mobility profiles of each individual from this recently excavated site, discuss what these reveal about the complex lifeways at Neolithic Legaire, and review the potential of our methods.

4 GENDER AND MOBILITY PATTERNS AT THE BEGINNING OF FARMING IN SE MORAVIA

Abstract author(s): Morell-Rovira, Berta (Archaeology of Social Dynamics Research Group. IMF-CSIC) - Tvrdý, Zdeněk (Moravian Museum. Anthropos Institute) - Díaz-Zortia Bonilla, Marta (University of Tübingen, Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters) - Bickle, Penny (University of York. Archaeology Department) - Tóth, Peter (Masaryk University, Department of Archaeology and Museology) - Přichystal, Michal (Institute for Archaeological Heritage, Brno) - Bedáňová, Alžběta (Moravian Museum, Institute of Archaeolog.) - Masclans, Alba (Archaeology of Social Dynamics Research Group. IMF-CSIC)

Abstract format: Oral

New insights into the experiences of gender and kinship in Central-European Early Neolithic communities have been recently approached in recent years from different methods, such as isotopic analysis, DNA, use-wear analysis or osteology. As a result, these communities have been related to early signs of patrilocal exogamic practices, gender-differentiated demographic and dietary patterns, sexual division of labour, and interpersonal violence. These proposals have as a common denominator a high level of internal dynamism as farming spread through Central Europe. Though some general patterns can be identified across the main Linearbandkeramik area, questions as to heterogeneous gender identities and whether or not generalized patterns apply everywhere remain debated. This presentation aims to explore the presence of patrilocality and its possible consequences regarding women's quality of life and female gender construction within the first European farming communities of south-eastern Moravia (Czech Republic and Slovakia). Specifically, new data on the mobility ($87\text{Sr}/86\text{Sr}$ & $\delta^{18}\text{O}$) and the dietary patterns ($\delta^{13}\text{C}$ & $\delta^{15}\text{N}$) of some of the most well-known Linearbandkeramik funerary contexts of this area will be presented, considering the differences on grounds of sex and gender. The role of temporality in the analysis of these proxies will also be approached through Bayesian Modelling of new sets of ^{14}C dates, in order to examine if certain patterns could be related to some kind of temporal framework on an intra-inter-site level.

5 THE COLORING MATTER OF THE SCHEMATIC ROCK ART : FROM THE COMPLEMENTARITY OF THE ANALYSIS METHODS TO THE CREATION PROCESSES

Abstract author(s): Théron, Coline - Bordet, Pierre (Institut Néel, Centre National de la Recherche Scientifique, Université Grenoble Alpes, Institut polytechnique de Grenoble - Grenoble Institute of Technology, Centre National de la Recherche Scientifique : UPR2940) - Chalmin, Emilie - Defrasne, Claudia (Environnements, Dynamiques et Territoires de la Montagne, Centre National de la Recherche Scientifique : UMR5204 / FRE 2641, Université Savoie Mont Blanc, Centre National de la Recherche Scientifique : UMR5204) - Hameau, Philippe (Laboratoire d'Anthropologie et de Psychologie Cliniques, Cognitives et Sociales, Université Nice Sophia Antipolis 1965 - 2019, Université Côte d'Azur, Université Nice Sophia Antipolis 1965 - 2019 : EA7278, Université Côte d'Azur : UPR7278) - Le Turnier, Marianne (Environnements, Dynamiques et Territoires de la Montagne, Centre National de la Recherche Scientifique : UMR5204 / FRE 2641, Université Savoie Mont Blanc, Centre National de la Recherche Scientifique : UMR5204) - Martinetto, Pauline (Institut Néel, Centre National de la Recherche Scientifique, Université Grenoble Alpes, Institut polytechnique de Grenoble - Grenoble Institute of Technology, Centre National de la Recherche Scientifique : UPR2940) - Schmitt, Bernard (Institut de Planétologie et d'astrophysique de Grenoble, Université Grenoble Alpes, observatoire des sciences de l'univers de Grenoble)

Abstract format: Oral

Neolithic schematic rock art, with its presence over a vast geographical area from the Iberian Peninsula to Italy, and with more than 140 sites in southern France, constitutes in our view a new and particularly efficient way of approaching Neolithic societies and makes a new and certainly complementary contribution to the understanding of neolithic cultural geography, dynamics and lifeways. We will focus here on the physico-chemical analysis of the coloring matter of schematic rock art which provides information on various aspects of societies.

The research into the characterization of coloring matter first informs on the know-how, the techniques used to make pictorial matter (grinding, use of binder, heating). It used also gives information on the circulation of the matter, the uses of the territory and the social practices associated to rock art. Moreover, the physico-chemical characterization of pictorial matter allows for a better understanding of the structure of graphic systems, their syntax (by proposing

groupings of figures based on their composition, by identifying relative chronologies...), an essential aspect of understanding the cognitive nature of graphic systems, particularly of non-figurative ones.

We will present our work in progress on one major schematic rock art site, Otello rock shelter, in Bouches-du-Rhône (France), chosen for the abundance of the iconography, the polychromy and the chronological succession of different graphic phases and the presence of coloring geological materials in the rock shelter and around. We will present our methodology and the complementarity of the analytical methods. We will highlight the importance to work at different scales, from grain size to wall dimension, with both non-invasive (non-contact analysis, directly on the rock) and non-destructive (a micro-sample is taken and kept after analysis) approach, and both with point and imaging analyses.

6 WAVES GENTLY LAPPING UP AGAINST THE SHORE: A NEW THEORETICAL FRAMEWORK AND MODEL FOR CHARACTERIZING NEOLITHIZATION PROCESSES IN WESTERN ASIA

Abstract author(s): Menemenli, Yasemin (Umea University)

Abstract format: Oral

In endeavouring to understand the transition to farming archaeologists use models. These models have met with varying levels of success. Fundamentally, most archaeological models are inadequate. These characterize Neolithic transitions with a focus on subsistence and envisage a 'package' which includes domesticated crops and animals, the appearance of settled lifestyles, and technologically advanced materials. This 'package' is usually accompanied by the ultimate emergence of complex social organization, population growth, etc.

The available models often draw a sharp boundary between the 'so-called' Mesolithic and Neolithic periods and treat the process of transition as a linear progression towards the rise of modern civilization. These models often focus on the origins and the causes of the transitions and rarely touch on the processes of Neolithization. Therefore, many previous attempts to study the transitions to Neolithic lifeways are stuck within a mainstream archaeo-anthropological framework which does not realistically allow enough flexibility for one to discover the different avenues through which we can study the subject matter.

With this in mind, it is apparent that the currently available archaeological evidence, collected from the Middle East and Turkey, produces an extremely complex image that challenges earlier models, and opposes the idea of a linear transition to farming, indicating multiplicity in time, space, and place.

This article introduces a new conceptual theoretical framework herein called Multiple Wave Theory and a new model, aimed at characterizing Neolithic processes in the Middle East and Turkey, which attempts to place these transition events in a more realistic chronological and social context using a range of theoretically grounded and holistic methodologies.

A. FROM BITS TO BEHAVIOUR: QUANTIFYING HUMERAL ACTIVITY-RELATED CHANGES IN NEOLITHIC COMMINGLED SKELETAL ASSEMBLAGES FROM BELGIUM AND FRANCE

Abstract author(s): Liagre, Elle - Knüsel, Christopher (UMR5199 PACEA, University of Bordeaux) - Villotte, Sébastien (UMR7206 Éco-Anthropologie, CNRS, MNHN, Université Paris Cité. Musée de l'Homme; Quaternary environments & Humans, OD Earth and History of life, Royal Belgian Institute of Natural Sciences; Unité de Recherches Art, Archéologie, Patrimoine, Université de Liège)

Abstract format: Poster

The scientific analysis of human remains serves as one of the main avenues to improve our understanding of Neolithic lifeways. However, the often fragmented and/or commingled state of the remains gives rise to various methodological obstacles, which often leads to exclusion of such contexts from analyses. One of the ways to address these concerns is to shift the study focus from complete individuals towards single skeletal elements. In this context, a novel method, based solely on the humerus, is proposed and applied to Neolithic assemblages from the Meuse Valley (Belgium) and the Paris Basin (France).

The non-invasive method applies 3D imaging to quantify osseous alterations of the medial epicondyle of the humerus, an anatomical area that is particularly important for identifying physical activities performed during life. Based on comparison with clinical medical studies, these osseous alterations are likely linked to activities involving the upper limbs and manipulative behaviours of the hands, such as the throwing of objects, the use of axes and stone tool manufacture. When taken a step further, this method can be a means to study sexual division of labour in past communities, and yield insights into other sociocultural phenomena such as craft specialisation and subsistence changes. In short, this method explores the potential of these often disregarded contexts and can aid our understanding of early farming communities in Belgium and France.

Session theme: 6. Contested Pasts & Presents

Session organisers: Munawar, Nour A. (Doha Institute for Graduate Studies; Center for Conflict and Humanitarian Studies) - McAtackney, Laura (University College Cork; Aarhus University)

Session format: Regular session

Damaging archaeological remains, sites, or facilities is by no means a recent phenomenon and has been taking place in conflict zones and spheres for centuries. Destruction of archaeology is not limited to specific geographical areas or to any particular pasts and so can include many contexts, forms of damage, intentions, and aftermaths. We argue that conflict should be understood in broad terms, not simply as military actions but also structural violence and the long-term and naturalized outcomes of settler colonialism.

Since the beginning of the 20th century, destruction of cultural heritage has become a major characteristic of violent conflict, from wars of mass destruction to colonial practices. We wish to consider - what are the overlooked outcomes of violent conflict? Violent destruction has the potential to provide cultural memory with incidents that can be later materialized and memorialized, for good or ill. The destruction of some forms of cultural heritage can also allow for new discoveries, particularly in multi-layered cosmopolitan areas, that can enrich historic records and understandings of place. Less often explored, is the treatment of the material world in the aftermath of violent conflicts, which includes, often politicized attempts to remove or direct material survivals to hide or obfuscate the roles of protagonists as part of the post/conflict 'normalization' processes.

This session invites contributions to 'think outside the box' regarding how we study violent conflict and consider how it influences archaeology as a discipline, its practices, and methodologies, and simultaneously how we can help develop approaches to working with archaeology in the aftermath of wars. We welcome papers discussing theories, methods and case studies connecting archaeology and heritage in conflict across the world, including creatively imagining future ways to improve archaeological practices in post/conflict contexts.

ABSTRACTS

1 THE BATTLE AND THE WAR: WHAT DOES HERITAGE DO WITH COMPLEX STORIES?

Abstract author(s): May, Sarah (Arup)

Abstract format: Oral

A short research project investigating community priorities in post conflict reconstruction challenged my understandings of both heritage and conflict. Conflict is sometimes presented as an aberration, something which disrupts the normal life of agriculture, trade, building monuments. But conflicts don't have such neat beginnings and endings. Archaeology and heritage as practices often create beginnings and endings for things which are much more complex. The heritage practices which attend reconstruction serve two linked purposes, to create the timeline in which the conflict is finished (and had a beginning and end), and to naturalise the power relations which are asserted through the settlement. As such, the experiences of those who lived through the conflict may be deliberately erased. They may choose this themselves, to assert the conflict as an aberration. To investigate conflict is to trouble that settlement. In this paper I will draw on interviews with people displaced by conflict to explore how archaeology can respond to their needs.

2 MODERN AND CONTEMPORARY CONFLICT REMAINS: TO ERASE OR TO PRESERVE, IS IT THE QUESTION?

Abstract author(s): Mura, Mathilde (Archaïos)

Abstract format: Oral

Remains of modern and contemporary conflicts in the Middle East materialize a painful history. Stigmas of war have damaged ancient heritage place, archaeological sites and scarred the landscape over hundreds of kilometers. Military traces are considered as a destructive agent and as such are often rapidly razed or backfilled. Yet, they are witnesses of significant events that have shaped the Middle East and sometimes defined identities and communities.

This paper aims to question the importance or necessity of preserving the remains of war in post-conflict contexts. It will address the ethical issues of destroying modern remains from a social science, historical and archaeological point of view, as well as the impact on survivors and victims of the conflict. The question of who wishes to conserve and who wishes to erase should also be addressed, and whether it is a matter of cultural diplomacy, national identity, contested narrative or a deeply rooted community will, to engage or not into a memorial work.

This paper explores whether conservation is actually the issue regardless of who is the decision-maker, and who undertakes the actions. Rather, it suggests the essential question is elsewhere. Should a governmental directive from the antiquities directorate to remove all traces of contemporary conflict be considered comparable to a foreign archaeologist's decision to bulldoze contemporary layers to reach ancient levels on an archaeological site? Or the choice of a farmer backfilling a military trench to regain his economic activity? Would a community project to build a memorial be received the same way as interest of a contemporary conflict archaeologist to study and preserve these warfare remains? And would either project have the same impact in the recovery process of the victim's community? This approach should also raise the question of neutrality and debate whether it is achievable in this matter.

3 THERAPEUTIC DESTRUCTION: DEALING WITH A TRAUMATIC PAST AFTER CUBAN REVOLUTION

Abstract author(s): Hernandez de Lara, Odlaner (Syracuse University)

Abstract format: Oral

After the military coup of March 1952 led by former president Fulgencio Batista, Cuba entered in a dictatorship that resulted in a bloody violence with extreme state repression which included imprisonment, forced exile, murder, disappearance of people, and the display of corpses in public spaces. By 1958 a former colonial fortress became a torture and detention center known as the Escuadrón 41 of the Rural Guard in the city of Matanzas. Its destruction after the Cuban Revolution, presents it as an atypical case study, illustrating a process of forgetting that contrasts with the national master narratives. At the time, Fidel Castro's government transformed the former military barracks into schools, becoming one of many powerful symbolic narratives of breaking with the recent past. However, that is not the case of Escuadrón 41, which has been intentionally forgotten and erased from the official histories, showing this conflictive time as an external and distanced phenomenon not related with the local communities. Here, I present the first archaeological results in a multitemporal site, showing how destruction is conceived as a therapeutic process to deal with a traumatic past.

4 MATERIAL MEMORIES OF THE KARELIA BY THE DISPLACED KARELIANS AT THE POST-WWII PERIOD

Abstract author(s): Ylimaunu, Timo (Univeristy of Oulu)

Abstract format: Oral

Finland had to settle down some 300 000 to 400 000 Karelians as the aftermath of the World War II. Stalin and the Soviet Union demanded Finland to cede almost the entire region of Karelia, more than 10 % of country's area to the Soviet Union. Karelian people had to leave behind their home regions, their ancestral grave grounds, and their contemporary homes. Karelians were settled down in different regions in Finland. The memory of the Karelia was maintained by different material and immaterial ways, as the most visible way was to erect monuments in the graveyards since the early-1950s. In this paper will be discussed when and how these monuments were erected. One important question is that how the post-war period political elite reacted to these Karelian monuments and material memories of the lost Karelia during the era when Finland had to create and establish new and so-called trustful relationship with Stalin and the Soviet Union.

5 SICILY, SITES AND WORLD WAR 2: THE IMPACT OF MILITARY ACTIVITIES ON THE ISLAND'S ANTIQUITIES

Abstract author(s): Crisà, Antonino (Prince Mohammad Bin Fahd University)

Abstract format: Oral

World War 2 (WW2) can be considered the worst and most destructive conflict in the human history. Military operations and bombing killed not only millions of people but also caused much destruction in urban areas devastating entire cities, monuments, historical buildings and sites.

Considering its substantial cultural heritage, Italy represents a remarkable context in which WW2 put the preservation of historical buildings (e.g. churches) and antiquities at serious risk. Since June 1940 Italy was critically hit by enemy bombing and became a major war theatre starting from July 1943 when the Allied landed in Sicily and then advanced towards the north. As a consequence, the Italian government actualised a series of measures to preserve its heritage.

In particular, Sicily, an island rich of archaeological sites and antiquities, played an essential role during the war being extremely close to the northern African frontline. Based on substantial sets of records, my recent project entitled Cultural Heritage in Danger: Archaeology and Communities in Sicily during the Second World War (1940–45) (Ghent University, 2019-22) aimed to outline the effect of war on Sicilian antiquities.

The scope of my contribution is to present some final and fresh research data through the analysis of selected case studies. First, I introduce my project in the wider context of WW2 and cultural heritage safeguarding. Second, I assess a variety of Sicilian sites (Agrigento, Palermo, Solunto, etc.) in which military operations and bombing caused substantial or less considerable damages. Third, I demonstrate how military authorities often damaged ancient monuments for the impelling necessity of defending the Italian nation occupying sites and building up bunkers, anti-aircraft positions and trenches. Finally, such ‘invasive’ activities generated frictions with safeguarding authorities who were mostly interested in preserving sites and antiquities.

6 IS THIS FOR PEACE... OR WAR? EXPLORING CONFLICT-RELATED MATERIALITIES DURING THE SPANISH COLONIZATION OF TĀNO’ LĀGUAS YAN GĀNI (MARIANA ISLANDS)

Abstract author(s): Carbajo, Matilde - Villena Rodríguez, Noelia - Ramírez Corredor, Yvonne (Universidad Pompeu Fabra) - Moral de Eusebio, Enrique (Universidad Autónoma de Barcelona; Universidad Pompeu Fabra)

Abstract format: Oral

Modern Age conflict-related material culture is primarily analyzed in relation to European war and military tactics, this is especially true for the Tāno’ Lāguas yan Gāni (Mariana Islands). Traditional historiography has referred to the armed conflicts that resulted from the Spanish colonization of the archipelago (ca. 1668-1700 AD) as the “Spanish-CHamoru wars.” In doing so, this body of historical literature has framed such confrontations within European “war-peace” logics that equate the parties involved. Historical archaeologists have cautioned against the use of written sources to guide the interpretation of the archaeological record (i.e. Voss 2007), as this can lead to misinformed explanations of Indigenous materiality but also perpetuate the narratives that underpin colonial enterprises. In this paper we combine documentary and archaeological insights on both European and CHamoru (i.e. Indigenous) conflict-related materialities to challenge the notion of “war” in early modern conquest situations. We explore the CHamoru material culture and practices associated with armed confrontations to determine how the Spaniards strategically used or ignored them. We also argue that the CHamoru conflict logics were broken, leaving their related-material culture (such as the peace-making tortoise shell) symbolically ineffective since. Finally, we claim that the very materiality of European weaponry and war facilities was used not only to cause physical harm but to impose and sustain, through threat and fear, a colonial order in the archipelago.

7 POST/CONFLICT SURVIVALS AND ERASURES: TRACING PRESENCES AND ABSENCES IN BELFAST, NORTHERN IRELAND

Abstract author(s): McAtackney, Laura (University College Cork; Aarhus University)

Abstract format: Oral

Often our archaeological studies of modern conflict stop with the cessation of physical violence. But this paper will argue that an archaeological lens can – and should – be extended to reveal how the post/conflict context is navigated in terms of what survives and what is erased. Using the case-study of Belfast, Northern Ireland, this paper will reveal that the process of ‘normalization’ – that was a key focus for both authorities and communities after a long-term and low level civil conflict – has significant but unequal material consequences. Through a number of sub case-studies, which include security infrastructure, townplanning and mural-memorials, this paper will discuss how conflict and peace are both absented and presented – and even absented and later re-presented – in uneven ways in the post/conflict city. Ultimately, this paper will argue that post-conflict archaeologies can reveal the different priorities of materializing peace that change over time and also indicate the power dynamics between those who attempt to materially absent difficult pasts and those who aim to subvert deliberate erasures and reveal enduring social injustices.

8 ETHICALLY EXCAVATING MEMORY: INVESTIGATING THE DIGITIZATION OF THE MOBILE METHODOLOGY THROUGH AUTO-ETHNOGRAPHIC INTERVIEWS ON TROUBLES-ERA BELFAST

Abstract author(s): Meaklim, Lindsay (University of York)

Abstract format: Oral

Mobile interview methodologies are increasingly used in the Humanities to study place and landscape, including for archaeological research on recent conflicts. However, such methodologies can be exclusionary, resulting in participants with disabilities or infirmities being unable to provide information on their own experiences in contested environments. Using these methodologies on recent conflicts also raises ethical issues, as they could potentially retraumatise participants or others impacted by the conflict under study. A digital alternative allows participants to share their understanding and experiences of conflict, without the practical and ethical issues that the conventional method could raise. This study investigates such an alternative approach to the conventional in-person mobile methodology by digitising the methodology, using Google Earth and Google Streetview to conduct a digital tour. The digital tour was compared against the in-person method by interviewing three participants using both methods, in a conflict

archaeology study of the Troubles in Northern Ireland (1969-1998). Participants were asked to show the researcher how the conflict intersected with the material environment of where they lived in Belfast for each interview. The conventional in-person approach did provide more information (albeit over a smaller geographic area) on Troubles-era Belfast, but the digital provided sufficient information to be considered as an alternative if the in-person method could not be used, or as an initial screening stage to prepare participants for the in-person interview.

9 SHANKILL POPPIES AND POETRY: REMEMBRANCE AND IDENTITY IN ONE OF BELFAST'S URBAN CONFLICT LANDSCAPES

Abstract author(s): Winterburn, John (Independent Researcher)

Abstract format: Oral

Shankill Road is a major thoroughfare that runs west of Belfast city. It bisects a working-class area that rapidly expanded during the growth of the Belfast linen industry in the 19th century.

It is a linear, urban conflict landscape that maintains a collective memory of twentieth-century conflict. Its residents sent their sons to fight and die on the Somme in 1916. Hundreds lost their lives during a devastating Luftwaffe raid during Easter 1941, and it was the epicentre of Loyalist paramilitarism and a focus for violent conflict during The Troubles (1968-1998).

This paper theorises a visitor's perspective of how conflict is remembered and memorialised along Shankill Road and its hinterland. It focuses on the poppy, a divisive symbol on the island of Ireland but regarded by many as the 'universal symbol of remembrance and memory'. There are many representations of this flower along Shankill Road, perhaps more than any other street, appearing in wreaths, cemeteries, roadside memorials, crosses and murals. Like countless other places in the UK and Western Europe, the poppy is used to remember people, places and events.

However, on Shankill Road, the representation of the poppy is evolving. Together with poetry from the Great War, the flower is used to link to the remembrance of the Somme fallen, to legitimise paramilitary combatants 'killed on active service' and to remember those slain by adversaries. The poppy symbols delineate a ceremonial parade route through an urban conflict landscape and reinforce Shankill's identity as British, protestant and monarchist.

10 FROM BATTLEGROUND TO COMMON GROUND: HOW COMMUNITIES BECOME STEWARDS OF CULTURAL HERITAGE THROUGH SHARED NARRATIVES ABOUT THE PAST

Abstract author(s): Benard, Cheryl (ARCH International)

Abstract format: Oral

Our organization focuses on communities in post-conflict, who undertake grassroots efforts to rebuild social cohesion on the basis of a shared bond to sites and traditions of their cultural heritage.

The people of Alqosh, Iraq, a Christian village, have safeguarded a historic monument in their town - the Shrine of Prophet Nahum. Acknowledged by all three religions, his burial place was principally a pilgrimage site for Jews. His shrine was a place of prayer for the health of a loved one, for a happy marriage and a successful pregnancy - common human desires that overcross any differences in religion, language or ethnicity. When the historic building was near complete collapse and our organization temporarily stabilized the structure, local residents urged us to fully restore the site as soon as possible, their sense of stewardship and an expectation of us not to leave anything unfinished had an immense impact on how we conducted fundraisers and meetings and eventually were able to begin sooner than seemed possible at first. Through our work in Iraq, Syria, and Afghanistan, as well as with endangered sites in Europe, we have found that cultural heritage is a tool for "reverse-engineering" the power of disputative narratives to focus instead on shared hopes, concerns and cherished traditions. This includes intangible heritage such as children's stories, folktales and other practices that have analogous content in nearly every culture, and that can generally be shared without controversy. The proposed presentation will focus on case studies from ARCH's work in Iraq, and in Austria (repurposing of an alpine lodge that was twice burned to the ground in both World Wars in the tri-border region of Austria, Slovenia and Italy, but has now been re-designated by grassroots civil society groups as a place for shared celebrations, and for appreciation of nature).

Session theme: 3. Heritage Narratives and Representations

Session organisers: Ripanti, Francesco (Trinity College Dublin) - Sayer, Faye (University of Birmingham) - Fushiya, Tomomi (University of Warsaw) - Luck, Amy (University of Birmingham) - Sloan, Brian (Queen's University Belfast)

Session format: Regular session

Over the last decade the interaction between the arts, humanities, and social sciences, including archaeology, has been of growing interest and importance. Research has repeatedly demonstrated that cultural heritage-related activities can break down barriers to public participation and have a positive impact on individual and community wellbeing. The relationship between archaeology and wellbeing has not emerged out of the blue: it is aligned with specific goals in the Agenda for Sustainable Development and the Horizon Europe Strategic Plan. Wellbeing provides archaeology with an invaluable opportunity to widen groups of stakeholders, diversify demographics of both participants and professionals involved, demonstrate its impact on society and secure funds for projects.

Archaeology can impact everyone through activities such as object-handling sessions, excavation, and photography workshops in a historic landscape. Confirmed outcomes include improved socialisation, happiness, self-esteem, and reduction in stigma. Should archaeologists research wellbeing? May wellbeing be a game-changer for archaeology? Or is it a passing fad? Taking into account the themes and methods identified in recent volumes curated by Darvill et al. (2019) and Everill et al. (2022), this session aims to examine the recent developments and challenges in this emerging research area, expanding the discussion of the following points:

- The contribution of specific fields of study within archaeology (i.e. experimental archaeology) to wellbeing
- Interventions on archaeology and wellbeing in different domains (i.e. contract archaeology, urban planning, community healthcare)
- Methodologies and tools for impact assessment of individual and community wellbeing (i.e. specific scales, mixed-method analysis)
- Focus on the so-called vulnerable and under-represented groups (persons with disabilities, women, older persons, children, asylum seekers and refugees)

We welcome any paper focusing on the previous points and investigating the relationship between archaeology and wellbeing. We also encourage submitting data-informed papers and focusing on case studies from non-anglophone countries.

ABSTRACTS

1 BROADENING PERSPECTIVES: ARCHAEOLOGY AND WELLBEING IN THE MEDITERRANEAN

Abstract author(s): Ripanti, Francesco (Trinity College Dublin)

Abstract format: Oral

Research on archaeology and well-being has shown consistent and promising results in recent years, although much work still needs to be done. In 2020, the European Union launched the “Preparatory Action: Bottom-up Policy Development for Culture & Wellbeing in the EU”. The resulting report (CultureForHealth) is the first pan-European scoping review of the role of culture for wellbeing, but does not include archaeology as a potential contributor.

This session aims to strengthen the case for archaeology as a potential driver of wellbeing by exploring recent developments and challenges in the field. In particular, this presentation will introduce the session and present the results of a questionnaire conducted as part of the “Linking community archaeology and wellbeing in the Mediterranean” (LOGGIA) project. Given that the majority of archaeology and wellbeing projects and research to date have been carried out in Northern Europe and the UK, these preliminary data provide a basis for discussing how to expand archaeology-based interventions in wellbeing.

2 WELL-CITY SALISBURY: EXPERIENCES OF DELIVERING AND EVALUATING A SOCIAL PRESCRIBING PROJECT

Abstract author(s): Luck, Amy - Sayer, Faye (University of Birmingham) - Chalmers, Leigh (Wessex Archaeology; Well-City Salisbury)

Abstract format: Oral

Well-City Salisbury is a 3-year social prescribing project which supports people with low to medium mental health needs by delivering free, 8-week creative courses and volunteering opportunities. Courses are facilitated by the project's four partner organisations; ArtCare at Salisbury District Hospital, The Salisbury Museum, Wessex Archaeology and Wiltshire Creative – alongside local artists experienced in supporting people with mental health needs.

Researchers from the University of Birmingham are the project's independent evaluators, acting as a critical friend to help shape the project's evaluation methods and understand the impact of the project on both its participants, staff, and the community. As the project enters its third year, in this session we will critically and collaboratively reflect on our experiences of delivering a social prescribing project and consider how evaluation methods develop, specifically to measure the impact of creative cultural heritage projects and how these methods have supported partners and participants to understand the impact this project has on their wellbeing.

3 PROMOTING WELLBEING THROUGH ARCHAEOLOGY IN CORPORATE AND OTHER PROFESSIONAL ENVIRONMENTS

Abstract author(s): Orsini, Celia (Gaia Caecilia – Archaeology for Wellbeing)

Abstract format: Oral

This paper explores the ways in which archaeology and cultural heritage can help promote wellbeing in corporate communities and/or professional units in the form of non-medical therapeutic interventions. Archaeology for Well-being - Gaia Caecilia was created in 2021 to attempt to tease out how archaeology could be utilised in organisations to improve the mental wellbeing of their employees and work culture. To do so, a series of workshops were shaped using Cultural Heritage Therapy as a theoretical backdrop in association with tangible exercises and activities. The workshops are aimed to suit corporate environments and to serve amongst expatriated communities using the past as a grounding experience, helping individuals to connect with the land, and the enviroing communities. This recent experience has revealed more than a few challenges, including the terminology used to engage stakeholders and participants, the format of activities proposed and the language used to compete against the vast and fast-growing wellness industry. This contribution is an attempt to discuss the ways to reach a wider audience, without compromising content and remaining relevant, that is to say helpful, to the people the workshops are meant to serve.

4 HEALTH AND WELLBEING IN COMMERCIAL HERITAGE RESEARCH AND DEVELOPMENTS

Abstract author(s): Brem, Anne-Lieke - Sprengers, Wim (Arcadis)

Abstract format: Oral

At Arcadis we are dedicated to "Improving quality of life". The Dutch Heritage Team consists of 15 employees, who are eager to incorporate heritage – integrally, including archeology – in any type of (commercial) development: large- and small-scale projects, infrastructural projects, developments of the natural landscape, and advisory services for local, regional, and national governments.

Now, we are expanding our horizon by developing a 'health and wellbeing' domain. Easier said than done, since we are so often bound to strict formatting and limited budgets and timeframes. Nonetheless, it is the Dutch government's intent to enact the Environment and Planning Act in 2024. It combines and modernizes laws for spatial planning, housing, infrastructure, the environment (including heritage), nature and water. All these fields contribute to our quality of life, health, and wellbeing. And it forces governments to initiate participation processes. In addition, it is the Dutch government's intention to ratify the Faro Treaty. As it seems, this would be an excellent moment to implement the – for our team – new domain of 'health and wellbeing'.

Some of the subjects to incorporate in this new domain are quite straightforward, like the preservation of natural and green assets and creating recreative routes along heritage sites to encourage physical exercise. Other subjects – even though they are equally important – seem to be more difficult to implement, like object-handling and socializing.

Since we are still in a pioneering phase, we would like to explore the restrictions and possibilities of integrating health and wellbeing in commercial heritage research, to discuss how heritage can be used to achieve goals of health and wellbeing in future developments, to give some examples on how we could have integrated health and wellbeing in past projects and to gain valuable insights to further develop this domain.

5 TURNING POLICY INTO PRACTICE FOR ARCHAEOLOGY AND WELLBEING

Abstract author(s): Monckton, Linda (HE - Historic England)

Abstract format: Oral

The concept of wellbeing, embedded into some governments' policies, continues to grow in importance as a way of articulating social benefit. Whilst art and nature are commonly linked in the public's imagination to increased wellbeing outcomes, especially as a result of responses to covid lockdowns across Europe, archaeology is not (yet) given the same status in general literature or in policy, although this is changing.

Historic England published its first Wellbeing and Heritage strategy in 2022, this sets out our approach to considering wellbeing but what does it look like in practice? This paper will briefly introduce a strategic approach to wellbeing and then look at recent research into the specific wellbeing benefits of volunteering with archaeology and heritage carried out for us by the University of Lincoln.

It will then highlight three case studies in England (1) piloting wellbeing through archaeological monument management in Oxfordshire; (2) creative archaeological practice as therapy for vulnerable young people with archaeological partners; (3) working with community health and social prescribing.

Through these studies I will address the following ‘what works’ questions – how can wellbeing objectives help diversify participation with archaeology? How can wellbeing inequality be addressed working with people encountering disadvantage? In reality, how can we capture wellbeing benefits? What are the challenges and opportunities for archaeology and heritage working within local healthcare systems? The paper will end with a practical summary of issues and parameters for project design and implementation.

6 AMPHORA (AUTHENTIC AND MEANINGFUL PARTICIPATION IN HERITAGE OR RELATED ACTIVITIES) GUIDELINES FOR MENTAL HEALTH AND WELLBEING

Abstract author(s): Everill, Paul (University of Winchester) - Burnell, Karen - Makri, Eva (Solent University) - Baxter, Louise (Bournemouth University)

Abstract format: Oral

Taking part in heritage projects, including archaeological fieldwork, has become an increasingly popular way to improve mental health and wellbeing. But there can be times when projects might not have the right infrastructure to make sure that both the participants and the historic remains are well looked after.

In 2020 a team of researchers from Solent University, University of Winchester and Bournemouth University, with the support of Historic England, carried out a study that brought together a panel of 44 stakeholders in a Delphi consultation. The research informed a set of best practice guidelines to help make sure that both the historic environment and participants are looked after when they join ‘therapeutic’ heritage-based projects, and that the best possible results can be achieved safely.

This paper will present the background to the AMPHORA guidelines, the process by which they were determined through stakeholder consultation, key aspects of guidance – including the importance of working collaboratively with mental health experts and the involvement of those with lived experience – and the potential application of AMPHORA to a range of settings.

7 BETWEEN VISIBLE AND PERCEIVED: A NEW APPROACH TO LINK HERITAGE, COMMUNITY AND LANDSCAPE

Abstract author(s): Lombardi, Matteo (Ferrara University)

Abstract format: Oral

The relationship between the community and the environment is a central theme in the European Green Deal: how could the EU community approach a deep transformation towards a more sustainable society able to confront instances such as climate change, energy crisis and pandemic consequences? Cultural Heritage in this sense represents the common roots that connect people and spaces, generating a community at the micro and macro scales. The same connection, if positively addressed, could have positive effects on individuals’ mental and physical health. On this, the World Health Organisation stated that supportive environments are fundamental for individual and community well-being. Since the introduction of theories about community-assigned heritage values, it emerged the need to establish a methodological approach that could enable a multidisciplinary investigation of the heterogeneous set of factors that links archaeological-heritage landscapes and local communities. This paper approaches the issue by proposing a transdisciplinary methodology based on exploiting the full potential of 3D data combined with Heritage Community analysis. Starting from an analysis of the local communities’ perceptions (questionnaires and interviews), the workflow will include GIS-based visibility analysis to link physical and perceived features. In summary, this research believes that decoding such features and links, bridging research, local community perceptions and tools for planning could foster cultural democracy, place attachment and well-being.

8 FEELING USEFUL: CONSIDERING MENTAL WELL-BEING AMONG OLDER PARTICIPANTS IN ARCHAEOLOGICAL PROJECTS

Abstract author(s): Breen, Frances (Bournemouth University)

Abstract format: Oral

Feeling ‘useful’ to and valued by oneself, family, friends, and society has been shown to have a dramatic impact on mental and physical health of older people. This research focussed on people over the age of 60 as these represent a poorly documented but growing constituency. While younger people, military veterans and those who have sought assistance for their mental well-being have already been the subject of study in archaeological settings, older people have not despite large numbers supporting archaeology and heritage projects. There have been no studies investigat-

ing whether taking part in archaeological projects has an impact on older participants' feelings of 'usefulness' and how this could help us better understand the extent and potential benefits for older people's mental well-being.

A two-stage approach was developed, although its implementation was constrained by the COVID-19 pandemic restrictions in force during this project. This study sought firstly to examine and quantify the volunteering opportunities available through archaeological organisations in England to provide context for the project, and secondly by conducting a series of focus groups to explore the concept of usefulness from those who have participated in archaeological projects. From the focus groups four broad themes were identified: Fulfilment; Connectivity; Health Impact and Ageing.

Although the study was limited in scale, participants overwhelmingly reported beneficial impacts on mental well-being as a result of taking part in archaeological projects. As a pilot study this work revealed important insights that if multiplied have implications for those 60+ age-group communities across the country, and for the development and support of archaeological and heritage-based projects and their contributions to well-being. Collaboration with the health sector could have a huge impact on health and well-being and could frame how community organisations feed into the discourse and build on the agenda for health and well-being in communities."

9 CREATING COMMUNITY - CITIZEN SCIENCE AT AN URBAN EXCAVATION IN FINLAND

Abstract author(s): Jokela, Janna (Aboa Vetus Ars Nova Museum) - Aalto, Ilari (University of Turku; Aboa Vetus Ars Nova Museum)

Abstract format: Oral

Urbanization is a global megatrend that continues to pose challenges for individuals fitting into a community. Community archaeology can be a way to address the social challenges connected with urbanization by strengthening the participants' sense of being included in the story of their home city. In this paper, an ongoing urban community archaeology project in Turku, Finland, is brought up as a case study. The Aboa Vetus Ars Nova Museum is situated in the middle of the old town of Turku. The archaeological section of the museum was constructed around medieval ruins in the 1990s, and archaeological activity has continued at the site ever since. For several years, the museum has organized archaeology courses and presented the excavations to the interested public. In 2018, the museum widened its' community archaeology programme by including volunteers in both the excavations and in post-excavation activities. Over the years, this volunteer activity has been built up to the standards of citizen science. In 2020, the effects on wellbeing for both course participants and the volunteers were evaluated, and almost all participants felt that the experience had positively impacted their wellbeing. More importantly, the volunteers felt that partaking in the activity had deepened their relationship to Turku. The project had broadened the participants' idea of their home city to include not just the present but the past as well. Many community archaeology projects tend to rely on an existing community, while this case study shows that a community can also be successfully created through archaeological activity.

10 SUBJECTIVE WELLBEING OF STUDENTS DURING FIELDWORK TRAINING

Abstract author(s): van den Dries, Monique (Faculty of Archaeology, Leiden University)

Abstract format: Oral

Conducting archaeology as a volunteer activity or as entertainment is considered to contribute to the positive well-being of participants. This is what archaeology and heritage students interested in the societal value of their field of research learn. Due to the Covid 19 pandemic, the question came up whether university students when conducting archaeological fieldwork as part of their university training, would experience positive wellbeing effects as well. In 2021 this was studied for the first time among students who had been restricted in their fieldwork activities for over a year due to the Covid 19 pandemic. When they could do fieldwork for the first time during their Bachelors, they were asked to indicated emotions during four moments during fieldwork and the associated work in the lab afterwards. The tool used to measure subjective wellbeing is the 'wellbeing umbrella' (as developed by University College London).

This presentation will show the first results of the survey.

11 'MAKE YOUR OWN VOTIVE': IMPROVING LEARNING AND ENHANCING WELL BEING THROUGH MAKING

Abstract author(s): Morris, Christine (Trinity College Dublin)

Abstract format: Oral

Handling and making objects can make an important contribution to learning, bringing sensory dimensions to understanding technology, style and functions of objects; thus I use handling/making as building blocks in my teaching of university students. In the context of the pandemic, I had dual concerns about the absence of physical engagement with objects and their materiality (during the long period classes pivoted online) and about the individual and collective well being of our students, so I decided to redesign a traditional activity where we handle and talk about votive offerings

from healing sanctuaries. In the revamped activity I asked each student to make their own votive offering, to photograph and catalogue it, and then place it in an experiential/experimental space by writing a prayer or other piece of creative writing about it. There were no restrictions as to materials or form – as a way to encourage creativity – though many students took their cue from the types of human, animal and anatomical offerings one typically encounters at healing sanctuaries, past and present.

In this paper I describe and reflect on the effectiveness of the activity: did it (as I had intended and made explicit in discussion) create a space or an opportunity to help students to focus on their own well-being and that of their family and friends? And if so, has that impact continued beyond covid or fizzled out? In the discussion, I use three years of collected data from this activity, together with student reflections made at the time of making the votive, plus additional interviews conducted some time later.

12 **MAPPING THE CONNECTION BETWEEN REPRESENTATION AND WELL-BEING OF MINORITIZED DUTCH CITIZENS**

Abstract author(s): Kerkhof, Miyuki (Leiden University)

Abstract format: Oral

Culture – and the ways it is managed – is often a way in which inequalities are maintained and legitimized. Culture can however also be an instrument for positive societal change, and has the potential to improve well-being (Everill and Burnell, 2022). Current heritage practices (conservation, education, participation and representation) insufficiently appeal to and include the most disadvantaged groups of people, while we know that they are disproportionately affected by health inequalities.

In the Netherlands, an estimated 100,000 people are survivors of sexual violence, 90% of the victims are women (CBS, 2020). Half of the victims develop post-traumatic stress disorder (Rutgers, 2017), but not all survivors seek help even though they seek recognition and continued care (Hutschemaekers et al., 2019). Is there a way to harness cultural heritage to facilitate healing?

One in ten Dutch people live with a disability (CBS, 2017). While Dutch museums are striving to improve their accessibility, do these museums also broaden their exhibitions to represent people with different disabilities? And in what ways? Do disabled people find their portrayals and narratives representative?

This paper maps how these two disadvantaged groups experience their representation in Dutch cultural heritage and how it impacts their well-being. Through qualitative interviews, we gain knowledge on the lived experiences of highly underrepresented and stigmatized groups of people.

The paper will contribute to an expanding area of interdisciplinary research that not only benefits vulnerable groups with diminished health, it also seeks to inform inclusive heritage practices by engaging both women survivors and people with disabilities as stakeholders in this study.

13 **'BEYOND THE BINARY': FUNERARY ARCHAEOLOGY, GENDERED IDENTITY, AND ITS IMPACT ON MENTAL HEALTH AND WELLBEING**

Abstract author(s): Newbury, Dulcie (University of Bradford)

Abstract format: Oral

Archaeology can be used to critically engage with the present, inform our views of gender identities, and challenge contemporary biases, as well as enhance our understanding of the past and improve contemporary mental health and wellbeing. Today, gender inequality and discrimination impact mental health and wellbeing, with individuals in the queer community showing higher rates of mental illness, often linked to issues faced as a result of their identity.

This research uses archaeological materials to challenge interpretations of gender by eliminating predetermined ideas of identity based on binary sex and gender, with the aim of utilizing archaeology in gender debates today. The binary idea of sex and gender is not representative of identities and limits our understanding of people and identity today, and in the past. To determine the influence archaeology has in contemporary society and on wellbeing, academic and public facing workshops were conducted in May-November 2022 in Bradford. The aim of these workshops was to determine the role archaeology can play in informing, accommodating, and enhancing contemporary discussions surrounding sex and gender identity, with the goal of using these discussions to enhance mental health and wellbeing. The workshops required participants to work in small groups to engage with archaeological and contemporary case studies focused on sex and gender. The materials used challenge the binary concepts of sex and gender. This can provide individuals with a sense of history and community, which is proven to improve mental health and wellbeing.

The workshops showed that participants feel that the sessions and the use of archaeology can improve contemporary mental health and wellbeing by challenging cultural norms and highlighting diversity beyond the binary, both in the past and present.

14 STRANGERS NO MORE - FINDING CONNECTION IN A SHARED PAST

Abstract author(s): Schultz, Sophia (ARCH International)

Abstract format: Oral

In our work in Iraq, Afghanistan, Greece and Austria, we have witnessed how cultural heritage-related activities positively impact community wellbeing.

We know first-hand from our partners in the town of Alqosh in Iraq, that they have been disappointed over the years by strangers with helpful ideas but not much lasting impact.

We have learned how new friendships lead to productive professional relationships that often start small but can be maintained easily over years if one shares an interest in the general wellbeing of everyone involved (a young teacher in Alqosh once ran over to the site we restored in his town, to take a much-needed photo for us. This led to his deeper interest in our work, and consulting us on an exhibition, where he proactively flagged common mistakes (f.ex. the font used for his native language Neo-Aramaic) to help us succeed and his town to benefit.)

We have learned that shared heritage being presented at in-person events brings much joy and curiosity, f.ex., when we organized an event for children at an International Festival, where Buddhist children glued together our Bamiyan Buddha puzzle, while their parents learned about the most famous site of Afghanistan.

Lastly, we have learned about the unifying power of culture; this we observed at our Rumi Day in Washington DC, where the Indian ambassador and the Afghan ambassador both quoted their personal favorite Rumi poems. And we have also, over the years, observed this in Neapolis and Elafonisos in Greece, an island and a city where residents formed new “cross-border” connections based on their passion to protect the world’s oldest underwater city Pavlopetri.

I would like to give a presentation about real-life examples of how public participation in cultural heritage leads to community wellbeing with a focus on living people and their stories.

15 CREATING SOCIAL SPACES FOR WELL-BEING AT MUSEUMS AND LIBRARIES

Abstract author(s): Karlsson, Anna-Karin (Kalmar County Museum; Tingsryd Municipality) - Wollentz, Gustav (Nordic Center of Learning and Creativity)

Abstract format: Oral

Museums have a unique opportunity to let people engage not only with the past, present, and future, but also with other visitors. As such, museums can be facilitators for so-called low-intensity meetings. We here refer to unexpected interactions between people who would otherwise not have met, transcending social backgrounds, ethnicity, and age. A contributing factor to well-being is people’s ability to connect with others. Museums can, in a fundamental way, ease this by creating spaces of low-intensity meetings. Furthermore, objects and interactive elements can even create a socially meaningful exchange that go in multiple temporal directions: past, present, and future.

This paper presents the results of a pilot project where we traced synergies between how museums and libraries create social spaces. It could be concluded that areas where the architecture were encouraging people to physically engage with each other through objects and interactive design, to share personal stories and perspectives, were spaces where the most spontaneous meetings took place.

If museums gained a deeper understanding of how to facilitate low-intense meeting, by for example tracing synergies to other sectors, such meetings could be better incorporated in future exhibitions, contributing to well-being and social cohesion.

77 FROM THE GROUND-UP: PERSPECTIVES ON ANIMAL-HUMAN RELATIONS FROM THE SITE TO THE LAB

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Almeida, Nelson (Uniarq - Centre for Archaeology of the University of Lisbon) - Ribeiro, Artur (Christian-Albrechts-Universität zu Kiel)

Session format: Regular session

In recent years, much progress has been made in the study of human-animal relations. By de-centring the human, animals have become much more prominent in archaeological studies. In addition to this, advancements in isotope analysis have helped us understand the role of many animals in the past. Finally, archaeologists have come to realize that animals were not always subordinate to human rule; that many animals in the past were social beings alongside humans, and that they have more agency than previously assumed.

Before these developments, however, human-animal relations needed to be inferred primarily from their positioning, quantity, taphonomy, and location within archaeological sites. In fact, much of what we know about human-animal

relations stems precisely from onsite analysis. Whether it is funerary structures with both human and animal burials, collective structures which contain animal comingled with human remains, the intentional burial of animals, ritual meat offerings, or the deposition of feasting remains, there is still much to understand about the status and role of animals. Furthermore, much of this understanding relies on the knowledge of what is an intentional (or structured) deposition and what is a secondary deposition, or even what “waste” meant to past people.

The aim of this session is to combine both the study of animal-human relations as they appear onsite and what they tell us from lab work, independently of chronology. Overall, we intend to uncover animal-human relations in a holistic manner, demonstrating that human-animal affinity covers the entire spectrum of natural, economic, and social relationships.

ABSTRACTS

1 EXPRESSIONS OF BODY AND FORM: EXPLORING ANIMAL, HUMAN, AND OTHER-THAN-HUMAN RELATIONSHIPS AT NUNALLEQ IN SOUTHWEST ALASKA

Abstract author(s): Paskulin, Lindsey (ADaPT Laboratory Facility, Department of Anthropology, University of British Columbia) - Masson-MacLean, Edouard - Britton, Kate - Knecht, Rick (Department of Archaeology, School of Geosciences, University of Aberdeen) - Speller, Camilla (ADaPT Laboratory Facility, Department of Anthropology, University of British Columbia)

Abstract format: Oral

Since time immemorial, animals and humans have occupied overlapping spaces and led interweaving lives. In the Arctic, relationships between humans and animals are central to Inuit, Iñupiat, and Yup'ik Indigenous worldviews and form the basis for lifeways in northern regions. Bone, ivory, antler, and other animal-based raw materials represent a significant portion of Arctic archaeological assemblages, and are used in the creation of adornment pieces, ceremonial regalia, and tools for hunting, fishing, and crafting, among others. Nevertheless, due to physical modifications made in the creation of these objects, knowledge is limited concerning their taxonomic origin. Advances in high-resolution mass spectrometry allow for the recovery of protein from archaeological material for taxonomic determinations of otherwise unidentifiable material. Collagen peptide mass fingerprinting, or Zooarchaeology by Mass Spectrometry (ZooMS), has been recently optimized to be minimally invasive, permitting its application to culturally sensitive material including bone, ivory, and antler belongings. We applied minimally-invasive ZooMS to belongings at Nunalleq, a pre-contact village in Southwest Alaska, to address questions concerning raw material selection as it informs and is informed by the final modified form. Through the analysis of zoomorphic and anthropomorphic figurines and items of adornment, this study aims to identify taxonomic origin and investigate the relationship between raw material selection and animal symbolism in the creation of memory, personhood, and concepts of the body.

2 ABUNDANCE OF NON-ADULT OVICAPRINE BONE REMAINS AT THE ARCHAEOLOGICAL SITE OF GUINEA (EL HIERRO, CANARY ISLANDS)

Abstract author(s): Fumero, Emilio (University of La Laguna)

Abstract format: Oral

El Hierro is the smallest and westernmost island of the Canary Islands archipelago. Despite having several emblematic archaeological sites, little is known about its indigenous inhabitants before the European conquest in the 15th century. What we do know about these societies is that their precarious economy (due to the limitations of the territory) was eminently pastoral. The site of Guinea was excavated between 1993 and 1994. These interventions made it possible to characterise it as a habitat site and to identify the signature of an important human activity with several areas of material concentration. The zooarchaeological record of this site is striking when compared with other islands, both for the variety and quantity of wild species which in most contexts are very sporadic and which here seem to be the result of the need to supplement the products obtained from livestock. This preliminary study focuses on the abundance of immature ovicaprine remains in relation to the rest of the faunal record. When considering different levels separating the areas of activity, we observe that between 15% and more than 40% belong to non-adult goats or sheep. When the analysis is made considering all remains of each level together, we see that, out of more than a thousand bones, between 20% and more than 30% belong to juvenile sheep and goats. In addition, most of the bones are thermoaltered and many show cut marks related to fleshing. Our hypothesis, following the traditional view of these human groups, is that the abundance of non-adult faunal remains reflects a strict birth control regime for the livestock, which ensures that resources are not spent on non-productive animals and also that milk is not used to feed the young.

3 THE WASTE AND THE WILD: NON-DOMESTIC ANIMAL REMAINS AS EVIDENCE OF COMPLEX HUMAN-ANIMAL RELATIONSHIPS

Abstract author(s): Crowley-Champoux, Erin (University of Southern Maine)

Abstract format: Oral

Archaeological remains from late Iron Age and Early Medieval Irish sites (dated to ~1-1100 CE) demonstrate a strong relationship between humans, livestock, and commensal animals. Most research into human-animal relationships in agricultural contexts tend to focus on the major livestock species and, occasionally, canine and feline companions. Though small, however, there is often a 'wild' or 'other' category on the list of taxa in zooarchaeological reports. These oft-overlooked animals tend to be rodents, fish, and birds. Because these taxa represent a small contribution to the total dietary breadth or economic focus of the site, their presence in the assemblage is usually attributed to natural causes, an incursion, rather than as evidence of relationships that the community had with their environment and with these animals. This paper explores the importance of wild species in these contexts, their importance in economic and social relationships, and the potential for understanding complex relationships that human communities had with their environments and 'other' animals.

4 FROM PREY TO SOMETHING ELSE? THE HORSE AND RED DEER IN PORTUGUESE PREHISTORY (CA. 12.000 - 4.000 BP)

Abstract author(s): Almeida, Nelson (UNIARQ, Centre for Archaeology of the University of Lisbon) - Barreira, João (CEAACP, Centro de Estudos em Arqueologia, Artes e Ciências do Património; O Legado da Terra, Cooperativa de Responsabilidade Limitada)

Abstract format: Oral

Starting from the faunal record, we will discuss the different papers that equids and red deer had in the economic and non-economic spheres of prehistoric groups. Western Iberia, more specifically the current Portuguese territory, is presented as a case study during the ca. 12.000 – 4.000 BP period. Hence, we will review evidence on the dynamics related to these species over the long duration, among hunter-gatherers, agro-pastoralists, and the first metallurgists.

Red deer are some of the most recurrent animals in faunal records and graphic representations, while the importance of equids seems to have been different, especially from a quantitative economic standpoint. The exploitation of these species diverged during this large period, as well as their representation in artistic cycles, or their use in other possible symbolic practices. These aspects will be assessed by crossing data related to the exploitation of these animals for economic purposes, with information on their use as part of "meaningful" contexts (structured depositions), as a representation (rock art), or as a base for representation (modified remains).

A. PALEOECONOMICAL AND PALEOENVIRONMENTAL STUDY OF A CUCUTENI-TRYPILLIA SETTLEMENT FROM IASI, ROMANIA

Abstract author(s): Malaxa, Daniel (Iași Institute of Archaeology)

Abstract format: Poster

Following the preventive archaeological research undertaken in the municipality of Iași (Iași County, Romania) - on the streets of Sf. Andrei, no. 51 and Palace no. 4 - vestiges dating from the Cucuteni-Trypillia culture, B2 stage (Chalcolithic period) were also discovered. Among them is a ritual pit, with a very rich inventory, made up mainly of ceramic fragments and faunal remains.

Animal husbandry and hunting were the most important activities for obtaining animal protein for this prehistoric community, but as an additional source of food, fishing and molluscs gathering could be also practised.

The domestic taxa identified were: *Bos taurus* (domestic cattle), *Ovis aries* (sheep), *Capra hircus* (goat) and *Sus domesticus* (domestic pig), and the wild ones were: *Bos primigenius* (aurochs), *Cervus elaphus* (red deer), *Equus ferus* (wild horse) and *Sus scrofa* (wild boar). The domestic species were exploited mainly for secondary products and only when they reached a mature age were slaughtered for the primary products.

Based on the identified wild taxa, the palaeoenvironment at the time of operation of the studied settlement was estimated as predominantly steppe with a forest relatively close to the settlement. Also, the presence of the river shell indicates the existence of a hydrographic artery near the settlement.

B. ARCHAEOZOOLOGICAL APPROACH TO URBAN SETTLEMENTS OF MEDIEVAL MOLDAVIA: CASE STUDY OF THE SITE FROM TÂRGU NEAMŢ (ROMANIA)

Abstract author(s): Stanc, Simina Margareta - Bejenaru, Luminița (Alexandru Ioan Cuza University of Iași) - Diaconu, Vasile (History and Ethnography Museum of Târgu Neamț)

Abstract format: Poster

This work aims to evaluate the animal resources and their use in the medieval urban settlements of 14th-16th centuries from Târgu Neamț (Neamț County, Romania). In the last decade, the archaeological excavations in this medieval town revealed traces of several dwellings and household complexes, rich in materials consisting in ceramics, iron objects, animal remains.

Animal remains are described in terms of their frequencies, based on the number of remains and the minimum number of individuals, and of selection by age and sex.

The archaeozoological analysis emphasizes the importance of animal husbandry (mammals and birds) in the local economy, and a low representation of hunting (mostly mammals) and fishing. Cattle (*Bos taurus*) dominate the assemblage, representing about 58% from the total identified remains; pig (*Sus domesticus*) follows in frequency (12%), then sheep/goat (*Ovis aries*/*Capra hircus*) with 7%. Horse (*Equus caballus*) was consumed, as it is proved by the butchery marks identified on few bones.

Results of age at death and sex estimations indicate that cattle herd management was aimed at ensuring milk production, draft force, and securing breeding stock; pig was raised mainly for meat and fat.

A comparative archaeozoological study shows similarities of the analysed settlement with other towns of Medieval Moldova (i.e., Siret, Baia, Vaslui, Târgu Trotuș).

This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-III-P4-PCE-2021-1180, within PNCDI III.

C. HUMAN-ANIMAL INTERACTIONS IN THE MEDIEVAL MONGOL CITY OF COSTEȘTI (REPUBLIC OF MOLDOVA)

Abstract author(s): Bejenaru, Luminita - Stanc, Simina („Alexandru Ioan Cuza“ University of Iași, Faculty of Biology) - Vornic, Vlad (National Archaeological Agency, Chișinău) - Bacumenco-Pîrnau, Ludmila (Romanian Academy - Iași Branch, Institute of Archaeology)

Abstract format: Poster

The western periphery of the Mongol Empire (The Golden Horde) extended in the 13-14th centuries to the east of the Carpathians. Under the “Mongol peace”, in 14th century, several Mongol cities developed in favourable economic conditions, among them being the urban settlement from Costesti (Republic of Moldova). The Golden Horde city from Costesti, with an estimated area of about 400 hectares, represented an important political centre, with its own monetary issue. Archaeological excavations have revealed clear evidence of the Golden Horde culture, represented by numerous ceramic vessels, both common and luxury ones, glass and steatite vessels, bronze mirrors, pieces of jewellery, a rich collection of coins etc.

This study discusses human-animal interactions in this Mongol urban site of 14th century, in terms of archaeozoology. Animal remains are described as frequencies, selection by age and sex, body part representation, and butchery patterns. The results show a specialised way of animal exploitation and consumption. The main animal species used in the food economy were sheep/goat (*Ovis aries*/*Capra hircus*), cattle (*Bos taurus*) and horse (*Equus caballus*), similar to other contemporary Mongol settlements. The hunting records a very low rate during the Golden Horde period, this could be another characteristic of Mongolian big cities.

This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-III-P4-PCE-2021-1180, within PNCDI III.

90 SETTING ARCHAEOLOGICAL HERITAGE POLICY AT THE EUROPEAN LEVEL: PUTTING IT INTO THE HANDS OF ARCHAEOLOGISTS

Session theme: 3. Heritage Narratives and Representations

Session organisers: Viragos, Gabor (EAA Heritage Advisory Committee; Hungarian National Museum) - Fries, Jana (EAA Heritage Advisory Committee)

Session format: Regular session followed by a roundtable

This session, organised by the EAA's recently-established Heritage Advisory Committee, will consider the role of the EAA and related organisations in directing international policy in relation to the management and protection of

archaeology. We say 'directing' rather than 'advising on' or 'guiding' policy in order to recognise that although members of the EAA and similar bodies have no legislative powers, we are those who are most immediately and directly concerned with the current and future condition of our discipline and the material with which we engage. Accordingly, we believe that policy and regulation relating to our activities should be driven by and designed for us, rather than by other agendas. Such a concern goes into all those areas that may affect archaeological and heritage work – such as policy on agriculture, infrastructure work (including flood protection), utilities (e.g. water and energy), natural heritage preservation, development, etc.

We invite contributions from EAA members across Europe which will provide insight and opinion on the following topics:

- What is the proper role of the EAA in setting policy on archaeological and heritage matters?
- What are the key issues we should address in considering policy initiatives?
- Is advocating for legislation for protection of the archaeological heritage enough – or should we do more? If so, what?
- How do we engage with the different roles, organisational structures and authority of associations of European nation states, specifically the European Union and Council of Europe?
- How do we influence policy in those countries that do not belong to either the EU or CoE but whose actions and policies affect the treatment of archaeology in European countries?

ABSTRACTS

1 THE ROLE OF PROFESSIONAL ARCHAEOLOGICAL SOCIETIES IN FORMULATING NATIONAL AND SUPRANATIONAL CULTURAL POLICIES – AN EXAMPLE OF YUGOSLAVIA

Abstract author(s): Lorber, Crtomir (Independent researcher)

Abstract format: Oral

Archaeology is a part of cultural policies however it struggles to formulate a discussion with regional, state, and European institutions, although archaeological societies are operating in every EU member state. In the history of archaeology these societies had an important role and EAA shouldn't be absent from formulating EU cultural policies. For its role we can look to history as EAA faces similar challenges to those faced in the past. We can look for answers to the session's questions by analysing similar supranational organisations such as the Archaeological Society of Yugoslavia (ADY), which unified six national archaeologies of former Yugoslavia. We will discuss:

- The advisory role of ADY in the formulation of Yugoslav cultural policy, both on national and international levels.
- The functions and initiatives of ADY – its involvement in the formulation of the Yugoslav heritage legislation and structuring of archaeological institutional network, its contributions to the archaeological publishing activities etc.
- The legal status of ADY and its influence on legislative processes.
- The federalisation of ADY, focusing on the relationship between the Yugoslav and Slovene archaeological societies.
- ADY in the Yugoslav foreign policy focusing on the planned internationalisation of the Yugoslav archaeology.
- The legacy of the supranational ADY in the South-eastern Europe.

Understanding the Yugoslav experience, successes and failures, offers an argument in favour of the EAA as a tool of the development of European archaeology. Past experiences show a supranational archaeological association can work successfully on different aspects of cultural policy, as long as it is properly supported and it develops alongside the wider society. EAA could be instrumental in coordinating the views of national archaeological societies on European issues, formulating a coherent role for these societies in EU legislation and the continued internationalisation of archaeology in the EU.

2 CLAIMS AND RIGHTS OF ARCHAEOLOGISTS IN SICILY AS POLITICAL ACTION FROM A EUROPEAN PERSPECTIVE

Abstract author(s): Valbruzzi, Francesca (Museo Interdisciplinare di Messina) - Giannitrapani, Enrico (Confederazione Italiana Archeologi)

Abstract format: Oral

As archaeologists actively involved in the research and protection of the archaeological heritage preserved in Sicily, we strongly support the direct involvement of archaeologists in determining present and future policies for the European archaeological heritage. However, here we urge EAA and HAC's awareness of the current dramatic situation of the Sicilian heritage and the constant professional downgrading of archaeologists within the regional administration. Since 1975, Sicily has a partial autonomy on cultural heritage, even if limited by the national legislative codes. At the end of

the 1970s, advanced reforms were approved by the progressist government of Piersanti Mattarella, later assassinated by Mafia, including law no. 80/1977, „Regulations for the protection, enhancement and social use of the cultural and environmental heritage of the Sicilian Region“. It had the grand ambition of creating a virtuous circuit between scientific research, contextual heritage protection and cultural promotion of local communities, with a key role for archaeologists and other specialists in decision-making. After that reforming season, almost a utopia, imposture prevailed in Sicily. Over the last 50 years, regional governments have unlawfully brought heritage under strict political control and systematically excluded archaeologists from their directive functions. None of the Sicilian superintendencies, museums or archaeological parks is today directed by archaeologists but by „managers“ with no specialist skills and qualifications. The archaeologists working in the regional administration, universities, and professional archaeology have united in denouncing the anomalous power of regional politicians over the heritage institutions, asking to be put back in charge of those institutions to ensure the conservation of the regional heritage and its correct social use. Our paper discusses the criticalities of this system and the dramatic working condition of archaeologists but also aims to be a strong and clear political act of denunciation and a request for support from the European scientific community.

3 EUROPEAN ‘CONTACT ZONES’ FOR ARCHAEOLOGICAL POLICIES - SOME HISTORICAL CONSIDERATIONS

Abstract author(s): Schlanger, Nathan (Ecole nationale des chartes, Paris; UMR 8215 Trajectoires, Paris)

Abstract format: Oral

Just how are archaeologists, as professional researchers and heritage managers, able – or expected – to influence relevant policies at European-wide level? The fora where such policies are devised or fixed can be difficult to access, and fairly impenetrable in terms of their specialised language and consensus-striving practices. The harmonisation of national or state-party differences often dominates over the achievement of satisfactory scientific and heritage goals – especially in the case of relatively “hand off” competencies such as culture and heritage. To better identify some ‘contact zones’ where archaeologists may gain audience and audibility, it may be useful to take a step back and consider some milestones in the internationalisation of archaeology over the past century or so.

To better identify some ‘contact zones’ where archaeologists may gain audience and audibility, it may be useful to take a step back and consider some milestones in the internationalisation of archaeology over the past century or so.

4 WHY ENGAGING WITH THE EU AND AN EU LAW CREATING A PAN EUROPEAN ARCHAEOLOGICAL PLAYING FIELD IS ESSENTIAL

Abstract author(s): Forrestal, Colin (Independent Researcher)

Abstract format: Oral

As was highlighted in Session 778 at EAA Barcelona 2018 conference and in a presentation to the 2022 EAA Budapest conference session 436, the laws and practices concerning archaeology across Europe vary considerably in scope, practices and legislation and what is needed is an EU heritage and historic environmental law to create a level playing field.

This presentation will attempt to persuade you that while the creation of the Heritage Advisory Committee is a good start by the EAA in what it should consider to be its ultimate aim of being a pan European regulatory organisation, specifically being the central regulator and guardian within the EU. The Heritage Advisory Committee is right to put the EAA’s own house in order, both in codes of practice and ethics, for the time when the EAA becomes the regulatory body in the EU.

This presentation will argue that the EAA should be working with the EU commission and parliament to encompass various current EU directives applicable to the Heritage and Historic Environment into an EU directive that creates a basic pan EU law that protects, and legislates the European Heritage and Historic Environment including licencing all archaeological practitioners (including metal detectorists) at specific level of competence like a number of EU countries do, with the EAA having a ‘policing’ role and powers to ban people from exploiting the heritage and Historic Environment and pass them on for prosecution if necessary. This ‘law’ would also include marine and wetland environments as well as terrestrial. So, setting a ‘Gold Standard’ for the world to follow.

This directive/law would not stop EU member states increasing protection where it was deemed to be necessary, but it would create a minimum standard and a harmonisation of current member state laws. In other words, a level playing field.

5 SCIENCE COMMUNICATION IN PUBLIC ARCHAEOLOGY AND ITS ROLE IN DIRECTING POLICY

Abstract author(s): Banerjee, Rowena (University of Reading) - Flintoft, Paul (York Archaeological Trust; University of Reading)

Abstract format: Oral

Environmental archaeology has a key role to play in both directing heritage policy and in contributing scientific evidence to policy making in areas such as agriculture, nature conservation, and development, which affect archaeological, and heritage works with the potential of synergising the two. Effective science communication of environmental archaeological evidence in heritage narratives on archaeological sites and through public archaeology is essential for showcasing the importance of this sub-discipline and raising awareness for the pivotal role it has to play in engaging with the current challenges for human societies, heritage protection, and in leading archaeology and heritage policy.

In 2009, Karl Butzer reflected on 35 years of the *Journal of Archaeological Science* as an explicitly interdisciplinary medium, linking archaeology with the natural sciences, and one that emphasizes methodological innovation, noting that during this period the journal steadily grew. This growth in archaeological science research is not only represented in the expansion of *Journal of Archaeological Science* and the addition of *Journal of Archaeological Science: Reports* in 2015, but also sees this research published in an array of other scientific archaeology journals. Despite this vast and growing body of archaeological science research, the translation of the collection and range of scientific data from archaeological sites, the preparation processes of samples, and the explanation of results in general remains superficially explained to visitors to a heritage site or museum, if at all, and arguably experimental archaeology centres and citizen science projects could be better fora for science communication and engagement.

In this paper, we explore effective communication of environmental archaeological evidence and advocate for its integral role in policy making in conjunction with other bodies such as Government Agencies, National Parks and UNESCO Global Geoparks, and tourism initiatives such as the Council of Europe Cultural Routes.

6 EUROPEAN ARCHAEOLOGY HERITAGE POLICY: FRENCH PERSPECTIVES

Abstract author(s): Marx, Amala - Salas Rossenbach, Kai (INRAP - National Institute for Preventive Archaeological Research)

Abstract format: Oral

Starting from a specific national context and its archaeological heritage policy, we will try to give an overview of the French perspectives, not only on the national situation, but also on a broader European and global basis.

In France, the creation of an archaeological heritage policy and a national institute for preventive archaeology (not development-led archaeology) was desired and more than supported by archaeologists. They mobilised and fought for a stronger policy to protect the archaeological heritage. After 20 years, what can we learn from this experience of a partially public and centralised preventive archaeology policy?

Based on this observation, we will discuss the role of an organisation like the EAA in the development and protection of the archaeological heritage system in France, Europe and worldwide. We will try to highlight the importance of the European level from a political point of view and how to influence policy in countries where the principles of the Malta Convention are not applied. We will also mention the current and future challenges for archaeological heritage in terms of policy initiatives and how archaeologists can address them.

92 MARGINAL LANDSCAPES AND COASTAL ADAPTATIONS DURING PREHISTORY

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Moutsiou, Theodora (Archaeological Research Unit, University of Cyprus) - Menelaou, Sergios (Fitch Laboratory, British School at Athens) - Reepmeyer, Christian (Deutsches Archäologisches Institut)

Session format: Regular session

Critical reassessment of established theoretical conceptions of island social and cultural evolution, in association with new archaeological discoveries around the globe, have resulted in a new understanding of human interactions with the sea, ecological niche creation and adaptive responses, especially during climatically challenging times. On many islands and neighbouring coastlines research on the full extent of this unique human ecological plasticity as well as the web of interconnections between environment, climate and the organisation of the social landscape of early prehistoric societies have provided remarkable new evidence in recent years.

This session aims to critically explore the question of marginality and border-crossing across varied seascapes and coastscapes, and invites case studies drawn from, particularly, but not limited to, the Mediterranean. We invite contributions from various sources – archaeology, remote sensing, geomorphology, material analysis – that help build better insight into human prehistory, from the Palaeolithic to the Middle Bronze Age, on presumed marginal landscapes and adaptive responses to new, coastal environments, especially during episodes of climatic fluctuations. We

particularly welcome presentations on human interaction with maritime environments and of areas located on the periphery of what are archaeologically considered mainstream cultural processes. We aim at improving our understanding of the capacity of early prehistoric societies to engage and thrive on presumed inhospitable landscapes in challenging times of climate change.

ABSTRACTS

1 ON ROUTES, TOOLS AND SEA-VESSELS: THE 'SEAROOTS 2022-2024' PROJECT

Abstract author(s): Papoulia, Christina (University of Crete) - Chliaoutakis, Angelos (Institute for Mediterranean Studies - IMS-FORTH) - Zervoudakis, Panagiotis - Kotinas, Vasileios (University of Crete) - Reppos, Athanassios - Reppos, Nikolaos (Reppos Boatyard)

Abstract format: Oral

The relationship between human communities and the sea is a reciprocally transformative one. Buoyant vessels permitted prehistoric communities to gain further control of the ecosystem since it was possible to traverse large bodies of water and transport objects and animals. This, almost unavoidably, led to the colonization of new, unfamiliar places. Despite the differences in character and scale between the first rudimentary crossings and the fully organized maritime networks of the later periods of prehistory, the study of routes, networks and technology holds immense research potential.

The last 20 years, diachronic surveys and targeted excavations on islands of the Ionian Sea proved that we have much more to learn about Stone Age lifeways in this part of the world. A two-year research project focusing on the Central Ionian Sea islands and the opposite mainland coasts aims to provide a deeper understanding of a 'peripheral' area in terms of (a) Palaeolithic routines and dispersals and (b) Neolithic networks of socio-economic exchange. In contrast to the quest for 'origins' and 'revolutions' the SeaROOTS project seeks to investigate the process towards the development of a maritime lifestyle. To do so, it employs an interdisciplinary toolkit for the analysis of decision-making processes and mobility networks as influenced by the dynamic relationship with the fluctuating landscapes and seascapes and claims a multifaceted reconstruction of the human-sea relationship that is based on three proxies: a) archaeological stone tools, b) experimental sea-vessels and c) artificial communities.

2 SEASONALITY ON AN INHOSPITABLE ISLAND: THE ASPHENDOU CAVE PETROGLYPHS

Abstract author(s): Strasser, Thomas (Providence College) - van der Geer, Alexandra (Naturalis Biodiversity Center)

Abstract format: Oral

The Asphendou Cave petroglyphs are located high in the Alpine zone of the White Mountains of west Crete (ca. 720 masl). Crete has been an island for over 5 mya. Its geographic isolation brought about the dwarfing of the endemic Pleistocene megafauna. Most of the endemic fauna went extinct before the end of the Pleistocene. One of these, the dwarf deer (*Candiacervus ropalophorus*), is represented in petroglyphs on the speleothem of the cave's floor.

The cave is located aside a steep ravine that connects the north and south coasts over very rugged terrain. It is in a high-altitude environment and is not easily accessible from the coasts. Its petroglyphs are a series of superimposed representations dating from very recent times to the Palaeolithic. The Ice Age dating for the bottom most glyphs is based on the depiction of quadrupeds that went extinct in the Terminal Pleistocene. Having isolated the quadrupeds from the superimposed glyphs that confuse the iconography below, a coherent image of the animals emerges. One can see that it is a representation of forty male deer (*Candiacervus ropalophorus*). All the males have annually deciduous antlers, some of which are quite lengthy. This may suggest a fall season, perhaps during the rut. These specific individuals would be ideal for hunters because they are adult males and may indicate a hunting strategy that does not focus on doe and fawns.

3 "IT'S A MATTER OF PERSPECTIVE": DECIPHERING MARGINALITY BETWEEN THE AEGEAN SEA AND ANATOLIA THROUGH A DIACHRONIC APPROACH

Abstract author(s): Menelaou, Sergios (British School at Athens; University of Cyprus)

Abstract format: Oral

For half a century several theoretical models and different approaches have been introduced and were gradually established in the investigation of human-sea interactions in the context of the Eastern Mediterranean. A special interest was then placed onto Aegean (prehistoric) archaeology, on the one hand due to the wealth of evidence and number of sites, but also thanks to the diverse land- and seascapes, natural adaptive responses, and range of methodologies. The geo-cultural region of the eastern Aegean, including the off-shore Greek islands and the western Anatolian (Turkish) coastline, has remained relatively underexplored, despite its nodal geographical significance for the investigation of theoretical issues related to ancient maritime connectivity, crossing of borders, and transforma-

tion of cultural identities. This paper aims to explore selected case-studies from the wider region, with a focus on the islands of the northeast Aegean, in order to develop a narrative of how their spatial character, meaning, and cultural dynamics were altered over time during prehistory. Building on previous and current analysis, this endeavour takes into consideration how shifts in archaeological narratives are also affected by biases in modern political borders and changes in intellectual trends and will try to integrate various means of evidence from material analysis, archaeology, and border theory.

4 'IN THE SHADOWS OF A GIANT'. A COASTAL ANALYSIS PERSPECTIVE ON EARLY BRONZE II-MIDDLE BRONZE II SARONIC GULF (GREECE)

Abstract author(s): Nuttall, Christopher (Swedish Institute at Athens; University of West Attica)

Abstract format: Oral

The Early Bronze II (EB IIA) phase in Greece marked the peak of a regional system of contact known as the so-called „International Spirit“ network. This system connected the Greek mainland, West Anatolia, and Crete, and was driven by Aegean islanders. The Saronic Gulf, which lies between the Peloponnese and Attica and consists of a long coastline and several islands and peninsulas, was a hub of settlement activity during EB IIA, with numerous settlements located along the shoreline and on the islands. However, by the end of this period, there was a decrease in settlement activity in the region, with several sites being abandoned. The exception was the large, long-lived settlement of Kolonna on Aegina island, which gained prominence in the Middle Bronze Age. This paper uses archaeological data, field-walking survey data, and novel coastal analytical methods to understand the changes in coastal activity between the EB IIA and MBA and determine whether coastal activity did indeed stop, why this may have happened, and how this dynamic landscape was inhabited over time.

5 SETTLING THE EASTERN MEDITERRANEAN ISLANDS: PERSISTING NARRATIVES OF HUNTER-GATHERER MARGINALITY AND THE CASE OF CYPRUS

Abstract author(s): Moutsiou, Theodora (Archaeological Research Unit, University of Cyprus)

Abstract format: Oral

Island colonisation by pre-agricultural communities in the Mediterranean region has recently become contentious with the discovery of a series of potential sites associated with maritime adapted, foraging people. This is in line with global research providing evidence for a substantial maritime capacity of hunter-gatherer people and settlement of often-isolated island settings from the Late Pleistocene onwards. The island of Cyprus stands out as an enigmatic case of hunter-gatherer marginality considering its large size, distance and visibility from the surrounding coastline. A Terminal Pleistocene (~12kya) human presence is largely explained as short-term exploratory visitations organised by Late Epipalaeolithic fisher-forager-hunters from the Levantine coast, followed by the arrival of agropastoralist populations who settled the island in one major diffusion event, responding to demographic pressure on the mainland. This paper summarises current views on island marginality and using the case study of Cyprus, argues that new island cultural reconstructions require a revision of conventional field methodologies and site location models. Since early populations favoured different ecological niches/resources compared to subsequent permanent farming lifeways, an emphasis on evidence of early human occupation in hitherto neglected areas, such as the coastal and upland landscapes of the island is needed. Predictive geospatial modeling and preliminary field results across Cyprus, discussed in this presentation, support the call to revisit narratives of marginality, remoteness and isolation on the island-level and within island environments.

6 RECONSTRUCTING COASTAL AND ESTUARINE LANDSCAPES SINCE THE DAWN OF HUMAN ARRIVALS: A CASE STUDY FROM SOUTHEAST IRELAND

Abstract author(s): Schuldenrein, Joseph (Geoarchaeology Research Associates)

Abstract format: Oral

Pioneering research on the human ecology of Southeast Ireland was initiated by Green et al. in the 1980's. Patterned distributions of Mesolithic artifacts across a 4-5 m high till plain overlooking the beach afforded a window on the earliest human occupations of this diverse landscape. Over the past 40 years independent efforts by local archaeologists and geologists showed that the beach sealed in and preserved earlier geomorphic settings. Their data pointed to changing landforms and discrete occupational settings through time. Alterations to terrain were the product of sea level fluctuations and climate change. Preliminary indications were that dynamic marine incursions, erosion, and estuarine dynamism were key to isolating variability in ancient subsistence landscapes. Since 2018 an interdisciplinary team of archaeologists and geomorphologists from Ireland and the U.S. implemented a sub-surface testing program at the Fornaght strand, a magnificent stretch of beach that yielded near surface evidence of in situ (ie. Bronze to Iron Age) human occupation post-dating the Mesolithic by at least 5000 years. Buried peat bogs capping and

interspersed with deep gleys underscored the complex movements of cyclic transgressive and regressive phases of shoreline encroachment and erosion. The organic sediments coupled with limited but diagnostic molluscan collections and pollen profiles provide absolute dates for episodes of riverine, brackish and marine sedimentation. Taken together the diagnostic archaeological settings and the dated elements of the substrate are contributing to a comprehensive picture of beach history in the Waterford Estuary. At the same time GIS based re-analysis of the artifact complexes on the upper (till) terrain refines our understanding of human adaptive strategies since the earliest human groups made their imprint on the landscape.

7 THE STOREGGA TSUNAMI - A MESOLITHIC DISASTER?

Abstract author(s): Kilhavn, Havard (University of Stavanger)

Abstract format: Oral

In this talk, I will discuss how we perceive the vulnerability of Mesolithic people, and how Mesolithic people themselves perceived vulnerability in the natural environment, based on preliminary results from the ongoing project LAST – Life after the Storegga Tsunami (Norwegian Research Council nr. 302858), exploring the social impact of the Storegga tsunami that hit the western coast of Norway and beyond 8200 years ago.

The overarching concern of research on the tsunami event has been to construct the tsunami as a Mesolithic (natural) disaster, inferring “disastrousness” from the perceived impact of the tsunami, which itself has been inferred, re-constructed and re-imagined based on a combination of empirical evidence for tsunami run-up, theoretical, large-scale mathematical modelling of the tsunami wave heights, and trendlines in summarised probability distribution models (SPD) of radiocarbon dates.

When discussing the social impact of natural phenomena like tsunamis, and concepts like hazards, resilience, and vulnerability, it is often a challenge to incorporate different levels of scale, both different kinds of large-scale data and the small scale, human “phenomenological” experience of people the ground. I will argue that our perception of the vulnerability of Mesolithic people who experienced the tsunami, and the corresponding notion of the tsunami as a disaster, to a large degree is a consequence of the large-scale of the data that have been used. By using a new, mathematical tsunami model, capable of estimating small-scale tsunami run-up along reconstructed Mesolithic shorelines, in combination with smaller-scaled case-studies of how the tsunami might have impacted specific Mesolithic sites, it might be possible to nuance both our own perception of the vulnerability of Mesolithic people, as well as gaining a glimpse of how these people themselves might have perceived this extreme, natural event.

8 SUBMERGED ARCHAEOLOGICAL LANDSCAPE PROSPECTION, ANALYSIS AND DISSEMINATION IN AUSTRALIA AND BEYOND

Abstract author(s): McCarthy, John - Benjamin, Jonathan (Flinders University) - O’Leary, Michael (University of Western Australia)

Abstract format: Oral

We will discuss the work on submerged landscape research in Australia by our team, building partly on lessons learned from underwater prospection and survey in Europe and the Levant. We describe surveys targeted on sub-tidal regions of Northwest Australia, undertaken initially through the Deep History of Sea Country project, which led to the discovery of the first submerged Aboriginal archaeological sites in the seas off the Australian continent. We describe subsequent research building upon these initial discoveries in a wide variety of ways. We also consider the ongoing impact that these discoveries have had on public and developer awareness of this sensitive archaeological landscape in Australia. Awareness of the existence of submerged landscapes has been preserved in many Aboriginal oral traditions but there has been very limited knowledge of it among the general public. This is being addressed through the development of digital resources, such as VR, interactive games and animations as well as documentary films. There is now a pressing need to characterise this archaeological receptor in the face of climate change, development pressure and ongoing natural processes. Finally, we describe some of the novel technological approaches being trialled to find and quantify more ancient underwater sites around the Australian coast.

9 OBSIDIAN EXCHANGE AND SEA-LEVEL RISE: A CASE STUDY FROM EASTERN INDONESIAN OF POST-ICE AGE RAW MATERIAL TRANSPORTATION

Abstract author(s): Reepmeyer, Christian (German Archaeological Institute)

Abstract format: Oral

Seafaring is a critical factor in human migration and the development of an interconnected globalised world. This paper investigates the global intensification of maritime interaction in the period after the Last Glacial Maximum (LGM) when sea-levels rose episodically until around 8000 years ago. It has been argued that associated loss of landmass was a critical contributor to this pattern, however, inundation was not equally distributed depending on the bathym-

etry of the coastal shelf. The aims of this paper are on new archaeological evidence for early maritime mobility based on lithic raw material transportation in the key regions of Island South East Asia.

Island Southeast Asia (ISEA) is an island-rich area of the tropics and was a maritime 'cradle' for the dispersal of the genus Homo as witnessed by the arrival of hominins on Java and Flores around one million years ago, early maritime dispersal to the Sahul (Australia and New Guinea) landmass of homo sapiens at >55,000 years ago and the more recent Austronesian expansion 5000-3000 years ago marked by human colonisation of remote Pacific islands.

Archaeological archives in Eastern Indonesia provide unique evidence for factors impacting this development, including environmental and sea-level change, subsistence patterns and population growth. New evidence for voyaging at the end of the Pleistocene, the time period ending ~12,000 years ago, represented by exotic stone tools in archaeological sites suggests that innovations in maritime technology were ongoing and ancient 'hunter-gatherer' people made regular voyages between islands.

93 ARTICULATING CHALLENGES IN POST-CONFLICT ETHICS, ARCHAEOLOGY AND ARCHAEOLOGICAL HERITAGE

Session theme: 6. Contested Pasts & Presents

Session organisers: Young, Ruth (University of Leicester) - Newson, Paul (American University of Beirut)

Session format: Regular session

Ethics are fundamentally important to all forms of archaeological theory and practice and are embedded within many professional codes of conduct. The ethics of archaeological engagement with conflicts around the world have also been subject to scrutiny and debate. While archaeology and archaeological heritage are increasingly viewed as significant elements of post-conflict work, with much to contribute to rebuilding stable and secure societies, there has been limited explicit acknowledgement and deliberation of post-conflict ethical issues and challenges for archaeologists. This conference session is intended to stimulate discussion around major ethical issues as they relate to the problems, and possible future directions of post-conflict archaeology and archaeological heritage.

We invite abstracts from colleagues working in post-conflict situations with concern for the ethical implications of their work. We are interested in discussing, from an ethical standpoint, the myriad challenges and ramifications of post-conflict work. A sample of the types of ethical questions, many of which intersect, and would benefit from fruitful discussion include: Should an ethical stance be based on global/Western-oriented protocols or be local and contingent? Should archaeologists be ethically accountable? How can the idea of accountability be incorporated into project planning, funding, and reporting? Whose post-conflict ethics do we privilege: government, heritage bodies or communities? In this session, we would like to explore these and many other potential questions in addressing and/or ameliorating ethical problems in post-conflict archaeology.

ABSTRACTS

1 RAISING SOME OF THE ETHICAL ISSUES POST-CONFLICT ARCHAEOLOGISTS SHOULD BE CONSIDERING

Abstract author(s): Young, Ruth (University of Leicester) - Newson, Paul (American University of Beirut)

Abstract format: Oral

Over the last 70 years, the importance of archaeology and archaeological heritage in post-conflict situations has increased, and the overt acknowledgement of this importance has likewise increased. Accordingly, archaeology is understood as having a significant role to play in a variety of post-conflict concerns from constructing national and community identities, to contributing new interpretations of the past. Major institutions such as UNESCO have invested heavily in post-conflict restoration and rebuilding programmes such as 'Revive the Spirit of Mosul'. In many post-conflict countries a range of institutions – both government and non-government – have also put a great deal of time, money, and effort into post-conflict archaeological heritage initiatives, and these have all involved archaeologists, many from western nations.

In this paper, we would like to stimulate discussion and consideration of the ethical responsibilities of archaeologists working in post-conflict situations. Drawing on various case studies and our own experiences as European archaeologists working in non-European post-conflict regions, we will begin by foregrounding some key issues concerning ethics and ethical responsibilities. For example, there are questions around the presentation of post-conflict archaeological work by regimes or other groups in ways that could be deemed unethical or that are not in line with a project's stated goals. Additionally, are there ever situations where it can be considered ethical to work with a regime that has been accused of war crimes against its own people? We do not pretend to have answers to these questions, but we do want to engage critically with such issues and begin to consider multiple ways to respond to them.

2 ANTICIPATING CHALLENGES TO POST-WAR ACCOUNTABILITY IN THE DESTRUCTION AND ABUSE OF ARCHAEOLOGICAL HERITAGE IN UKRAINE

Abstract author(s): Delacruz, Michael (Oxford University; Blue Shield International; Newcastle University)

Abstract format: Oral

The current war in Ukraine has had a demonstrable and devastating impact on archaeological heritage, and cultural heritage more broadly, throughout the conflict area. Thousands of archaeological artefacts have been damaged, destroyed, or stolen to include the wholesale extraction of collections from the regional history museum in Kherson in late October 2022; additionally, satellite imagery and eyewitness accounts attest to extensive damage to significant archaeological sites in the Black Sea littoral and elsewhere in occupied territory, and, since the occupation of Crimea in 2014, there has been substantial evidence to suggest that illegal excavations have been a persistent phenomenon. The 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict and its two protocols were designed to establish a normative regime by which those responsible for such occurrences would be held accountable for violations of international humanitarian law. This paper will recount the principal observations of Blue Shield International (BSI) during extensive consultations and assessment activities in Ukraine amidst the conflict to identify impediments to the effective implementation of the Convention. Ranging from inadequate pre-conflict protective and preparatory measures, lack of harmonisation between domestic and international law, minimal established protocols for the forensic collection of evidence related to potential heritage crime, and poor integration and communication between heritage, governmental, and security sectors, these challenges to the practicable employment of its provisions will be described. Likewise, the efforts to address these issues with the assistance of a wide range of international and national-level actors will also be examined, reinforcing the fundamental assertion that the prospect of effective post-conflict accountability is largely dependent on the steps taken to establish normative, peacetime standards and protocols well before conflict begins.

3 HERITAGE DOCUMENTATION IN CONFLICT: WHO CARES ABOUT MONUMENTS (WO)MEN?

Abstract author(s): Munawar, Nour A. (Doha Institute for Graduate Studies)

Abstract format: Oral

Destruction of cultural heritage in the Middle East and North Africa (MENA) region has become a major characteristic of the Arab uprisings (2010-2022). Cultural heritage sites have been deliberately targeted by the so-called treasure-hunters who have exploited political instability and security absence to shamelessly plunder ancient relics in Syria, Iraq, Libya, Yemen, and elsewhere. Simultaneously, the rise of Islamic State of Iraq and the Levant (Daesh) and the high-profile of looting incidents in Syria and Iraq have signified the importance of documenting the different types of heritage risks.

Documentation of damaged heritage has become an indispensable task for the post-conflict recovery of the concerned societies, predominantly during times that witnessed a relatively considerable number of armed conflicts, political and social instabilities, and natural disasters. The increasing worldwide interest in documenting how war and violence have been damaging heritage has provoked local enthusiasts to document heritage in conflict zones which ultimately threatened their lives and the lives and wellbeing of their families. This paper argues that heritage documentation can be hazardous as well as a tremendously critical task; however, this should not erase or obfuscate the ethics of archaeological practices during conflicts. By exploring the attempts and initiatives of various international and national organizations and entities to document heritage in conflict zones, this paper emphasizes that the ramifications of heritage documentation, as a (post-)conflict practice, can have a far greater impact than the conflict itself on individuals and practitioners documenting heritage on-situ.

4 ETHICS, PRAGMATISM, AND THE INTEGRATION OF ARCHAEOLOGICAL PRACTICE AND CONFLICT TRANSFORMATION

Abstract author(s): Horning, Audrey (School of Geography, Archaeology and Palaeoecology)

Abstract format: Oral

Ethics and practice lie at the heart of this consideration of archaeology in post-conflict settings. Building on literature from peace and conflict studies as well as social justice movements, I consider the role and responsibilities of archaeologists as we grapple not only with our positionality in the present, including our roles as citizens and scholars, but the ethical choices involved when we mobilize the past in aid of the future. I address recent critiques of engaged archaeologies and argue for the central importance of both empirical honesty and an underpinning in pragmatic philosophy as we frame our explorations of the past for purposes of conflict transformation and social justice. I draw specifically from my own work in embedding archaeology and heritage with conflict transformation in Northern Ireland to argue for a pragmatic approach to archaeology in post-conflict settings that engages archaeological evidence as an active component of a peacebuilding dialogue that is challenging and constructive rather than uncritically conciliatory. A

pragmatic orientation that acknowledges the real-life consequences of our work can be an effective paradigm for a future-oriented, epistemologically honest, and ethically-grounded archaeology.

5 IDENTIFYING MEMORY, MEANING, AND ETHICS IN OBJECTS RECOVERED FROM POST-CONFLICT ARCHAEOLOGICAL INVESTIGATIONS OF MILITARY CASUALTY SITES

Abstract author(s): Peixotto, Becca (HJF in support of DPAA) - Renshaw, Layla (Kingston University London)

Abstract format: Oral

The bodies and personal effects of military casualties from World War I and II are still recovered from conflict sites around the world. Archaeologists, anthropologists, and forensic scientists including those working on behalf of the United States Defense POW/MIA Accounting Agency (DPAA) or European organizations, work to identify and repatriate the dead following local and home country expectations and policies.

This paper explores the multiple identities of these sites, and associated artefacts. It considers the divergent understandings of material culture inherent in different disciplinary paradigms, depending on whether the site is primarily a place of forensic investigation, of conflict archaeology, or a potential heritage site and lieu de memoire.

Forensics prioritises the recovery of human remains, producing a hierarchical categorization of objects depending on their evidential value in reconstructing the identity of the dead and the circumstances of their death. This means a focus on objects in proximity to the deceased, including possessions, clothing, and life support equipment. These diagnostic materials may be analysed nearby or, for US casualties, repatriated to the United States for analysis. The fate of the wider material assemblage of materiel and debris is less clear cut. Commonly scheduled for destruction to avoid exploitation by relic hunters, re-use as memorabilia, or other forms of commodification, some conflict artefacts carry highly charged emotional and political associations.

Recent claims by local communities to retain conflict artefacts as part of their cultural heritage, destabilise these policy norms. We consider examples of how the disposition of artefacts can constitute a positive collaboration with communities where the conflicts were fought. We explore the association of memory and place, contrasting the meaning and value of those objects repatriated back to the United States with objects that remain, assessing the ethical tensions of divergent understandings and relationships to the past at these sites.

6 „A NEW RELATIONAL ETHICS“ FOR HERITAGE: WHAT FUTURE FOR ITS PEACEBUILDING POTENTIAL?

Abstract author(s): Viejo Rose, Dacia (University of Cambridge)

Abstract format: Oral

Fifty years after the ratification of the Convention Concerning the Protection of the World Cultural and Natural Heritage, the state of this heritage appears to be in dire straits facing onslaughts from a multi-headed hydra that has seen the destruction of ecosystems and lifeways around the world. Where, one wonders, has that left the peacebuilding mission of that Convention and of the very notion of World Heritage? Today, heritage is understood by critical heritage scholars as a process of meaning-making with constantly evolving associative values that make it highly political. This approach to heritage can shed light on the relationship between cultural heritage and violence, but to do so demands an analysis of the complex underlying motivations for destruction and, consequentially, the diverse forms of repair that might best respond to it. This challenge was further accentuated by the 2020 Sarr-Savoit report on the restitution of African heritage that called for a „new relational ethics“. How heritage is embedded in cultural/social/political networks and neglecting to consider how overt violence is part of an ongoing process of damage rather than an explosive expression of it has meant that past responses have often fallen short of repairing relations and the harm caused. Drawing on various examples and the work on the reparations done by different courts and governments, in this presentation, I argue that we need to consider new modalities of repair if heritage is to serve peacebuilding aims.

95 PUBLIC ARCHAEOLOGY IN DEVELOPMENT-LED ARCHAEOLOGY [PUBLIC ARCHAEOLOGY COMMUNITY]

Session theme: 3. Heritage Narratives and Representations

Session organisers: Oldham, Mark (NIKU - Norwegian Institute for Cultural Heritage Research) - Benetti, Francesca (Independent) - Watson, Sadie - Faccia, Kate (MOLA - Museum of London Archaeology)

Session format: Regular session

Especially since the Faro Convention, we have seen a European policy focus on having the general public more involved in archaeology and heritage. As arguably the type of archaeology that people encounter most in their everyday

lives, either as passers-by, infrastructure users, or as those who commission work, development-led archaeology is a crucial arena for the implementation of this policy focus.

This session will examine how such pan-European goals can be implemented and achieved in each nation state. Are there commonalities that allow for shared practice, or must we tailor a public-oriented development-led archaeology to the particulars of each nation's statutory, regulatory and bureaucratic system?

The concept of public benefit is often used as a means to mesh archaeological (social?) and commercial interest, and thus is a topic of interest for this session, as are discussions of the co-option of the UN's development goals. In addition, explorations of bureaucratic regimes and the overlaps and discrepancies between policy and practice are very much welcome.

ABSTRACTS

1 DEVELOP-LED ARCHAEOLOGY AT THE CROSSROADS: FROM A LOCAL ANALYSIS TO A GLOBAL PROPOSAL

Abstract author(s): Campos-Lopez, Teresa (University of the Basque Country - UPV/EHU; GIPyPAC - Research Group in Heritage and Cultural Landscapes)

Abstract format: Oral

The aim of this contribution is to propose a reflection, hopefully lucid, but above all, critical and committed on the preventive or development-led archaeological practice as a powerful weapon in order to increase of its presence in society, with a special consideration on the Autonomous Community of the Basque Country (Spain) as a case of study. In fact, this approach means to assess that there is no better example of what Public Archeology should be than the actions carried out from development-led archaeology. In this sense, these resources, among others, should be valued when socializing this practice.

After an analysis and diagnosis of a situation, our goal is to propose different future work lines to get over this situation of paralysis and exhaustion in which the archaeological practice finds itself, after the economic crisis and in a post-pandemic scene. We propose that this situation –must- forces us to make a reflexion and, especially, to debate, to develop new management models, in addition to reach new interpretations that allow us to face challenges and address the uncertainties that loom on the horizon.

In fact, this proposal for this meeting is based on the reflection carried out from a practice of development-led archeology that could be understand within taking into account what Public Archaeology is, for which it is an inseparable pairing and that must be implemented.

It is, therefore, a discipline that addresses a broad and complex issue, where different fields and multiple perspectives find their place: the commercial, the researcher, the informative, the educational and social perception, together with other legislative, regulatory and administrative approaches, with political and economic meanings, both in global and local scales and, above all, a reflective self-criticism and a constructive will for a common future.

2 PREVENTIVE ARCHAEOLOGY, RESTITUTION OF RESULTS AND PUBLIC INTERESTS, WHERE DO WE STAND?

Abstract author(s): Guillon, Mark (Institut National de Recherches Archéologiques Préventives France; University of Bordeaux)

Abstract format: Oral

Since the late 2000s, there has been an increase in the number of symposia and roundtables devoted to preventive archaeology since excavations of this type have become the norm. Such conferences have highlighted several key features of preventive excavations, not least: the scientific contributions made by the excavation of large areas in both rural and urban settings, the environmental impact of preventive excavations, and communication to the public of the discoveries made in all fields linked to the excavation of buried heritage. In addition, the publication of many specialised works in related disciplines using these archaeological results demonstrate the growing impact of preventive excavations.

Our team been able to contribute to these debates on several occasions, whether in France, in Europe, or more globally, through our specialities of funerary archaeoanthropology and physical anthropology. As professionals, we regularly disseminate the results of our preventive archaeological projects to the public; communication of our findings may take the form of conferences, site visits, workshops, or publications that help ,popularize' our activities, etc. Given this experience, in our presentation, we wish to raise the issue of the most effective ways in which to convey findings to the public. Above all, we wish to consider the implications of the investments made by public and private constituencies. This paper proposes sharing reflections on our current approaches, and asking what the state of the

art on this issue is in France and Western Europe. We will also examine the different ways in which the notion of public interest has been linked to preventive archaeology. We are interested not only in the formulation of results, but also the evolution of school and university teaching content. Finally, we plan to explore the means by which we may evaluate the reception of these developments by the public.

3 UTILISING A MULTIDISCIPLINARY APPROACH FOR COMMUNITY ENGAGEMENT IN SCOTTISH COMMERCIAL ARCHAEOLOGY

Abstract author(s): Johnston, Emily (The University of Edinburgh)

Abstract format: Oral

Whilst community archaeology has developed as a practice-led discipline, my research aims to examine the theory and value behind community engagement, in a developer-led context. As developer-led archaeology is often the setting in which the public interact with archaeology, it is important to examine these interactions to understand how to engage different audiences at each stage of the process. My research aims to create a matrix of engagement techniques which embeds theory into the practice.

By utilising a multidisciplinary approach to community engagement, my research draws upon different theoretical schools to understand how to develop a meaningful, inclusive and sustainable methodology. Crucially, this research aims to discern the value of different engagement techniques, by considering different stakeholders and audiences in a commercial setting. The structure of this framework provides flexibility to navigate pan-European legislation.

This research utilises Scotland as a case study, as literature and practices often approach UK-based practices as a whole, despite different planning policies and legislations in each of the devolved nations. Recently, Scotland has produced new legislation which embeds archaeology as a form of public benefit into the planning system. Additionally, since 2012, Scotland has implemented several strategies for increasing public participation in the historic environment – the most pertinent here being Scotland’s Archaeology Strategy. This research evaluates the effectiveness of these strategies for community engagement within a developer-led context, and considers a selection of case studies to discern trends amongst the current practice.

This presentation will explore the methodology behind creating a framework for community engagement, which is adaptable to the different settings of commercial archaeology within different local and regional legislative contexts. This framework has the ability to create legacy for current and future communities, striving to build upon the UN’s goals for sustainable development.

4 WHAT WE NEED IS A TOOLKIT! EXPLORING CHALLENGES AND POTENTIAL SOLUTIONS TO ENHANCING PUBLIC BENEFIT IN DEVELOPER-LED ARCHAEOLOGY

Abstract author(s): Jones, Cara (Chartered Institute for Archaeologists)

Abstract format: Oral

The opportunities of engaging wider audiences with the work that we do as archaeologists is recognised as an important consideration when undertaking any element of archaeological work. However, the active delivery of public archaeology is still not ubiquitous within developer-led archaeology – it is often delivered with non-standardised methods with little evaluation of impact.

Yet we know that supporting the delivery of public archaeology through developer-led archaeological investigations is one of the key areas that can contribute to the delivery of public benefit. Within the UK, when that process does take place, it is often instigated at the planning application stage.

Recent research by the ClfA Voluntary and Community Special Interest Group highlighted that embedding requirements for public archaeology (at the planning application stage) can be challenging. The research highlighted a need to provide support for archaeological advisors and practitioners on the delivery of public engagement activities through a range of different archaeological interventions.

In response to the results of that research, and supported by funding from Historic England, ClfA is working with Dig Ventures to produce a toolkit to enable these audiences to deliver public archaeology activities in developer-led projects. This new resource seeks to support the sector to enhance public benefit outputs through new guidance, signposting to existing resources and highlighting innovative case studies.

Drawing on the collective work completed by the ClfA Voluntary and Community Special Interest Group, Dig Ventures and ClfA, this paper will look at recent data which identified the challenges of supporting the delivery of public benefit and explore ‘toolkit shaped’ solutions to addressing the identified issues. This paper will conclude by exploring if resources (such as toolkits) might support a more widespread and standardised approach to incorporating public archaeology within a developer funded project.

5 CHILDREN, EDUCATION AND ARCHAEOLOGY IN DEVELOPMENT-LED PROJECTS

Abstract author(s): Oldham, Mark (NIKU - Norwegian Institute for Cultural Heritage Research)

Abstract format: Oral

On a recent development-led project in central Oslo, archaeologists from the Norwegian Institute for Cultural Heritage Research - NIKU) have focused on engagement with young children from local kindergartens and schools. This engagement has been undertaken as an integral part of the archaeological project, and as such has been funded by the developer – in this case the Norwegian railway administration, Bane NOR.

These two linked and age-tailored outreach programmes have taken place on site (for the kindergarten children, aged 2-6) and in the classroom (for the schoolchildren, aged 8-9). The different ages and the different sites for the programmes provide their own opportunities and challenges, and so planning and development in advance was crucial. This paper will use this project as a case study to expand on how development-led archaeology can play a role in education, and in broader terms to think about how young children can engage with, discuss and think about concepts such as time and chronology, change and development, and even archaeology and heritage management.

6 ANCIENT APPIA LANDSCAPES PROJECT: CULTURAL LANDSCAPES AND EXPERIENCES OF COMMUNITY ARCHAEOLOGY

Abstract author(s): Santoriello, Alfonso - Musmeci, Daniela - Vigorito, Marianna (University of Salerno)

Abstract format: Oral

The Ancient Appia Landscapes (AAL) project promotes the spread of historical, archaeological and environmental knowledge according to the Faro Convention, through the reconstruction of ancient landscapes along the Via Appia in the Benevento area (Campania, Italy). The research began in 2010 with preventive archaeological investigations (Development-led Archaeology) and led to the reconstruction of the itinerary of the consular road between the ancient cities of Beneventum and Aeclanum. It also paved the way for the identification of environmental phenomena as well as the population and settlement dynamics that shaped the rural fabric with socio-economic and productive activities.

The strategies adopted over more than a decade of research have enabled communities to be actively involved in the operational phases of the project as well as in the implementation of activities and initiatives to enhance cultural heritage.

The available knowledge constitutes a reservoir of information that people can use, with a bottom-up approach, in the co-planning of interventions aimed at sustainable development, both economic and social, of this inland area between Sannio and Irpinia.

The considerable environmental and cultural resources constitute a previously under-exploited territorial patrimony that can represent the starting point for growth and for the general improvement of the quality of life.

In this contest, the AAL project collaborates to the candidature of the Via Appia in the Unesco World Heritage List, promoted by the Ministry of Culture: it is an initiative of international scope which focuses on authenticity and integrity values of this cultural asset as a landmark of the widespread heritage, both material and immaterial, of southern Italy.

7 MEMORIES OF EGGEBY - CREATING MEANINGFUL OUTREACH IN CONTRACT ARCHAEOLOGY

Abstract author(s): Nelson, Matthew (Linnaeus University)

Abstract format: Oral

An archaeological excavation is a window to the site that is limited in time, every contract archaeology project differs from each other and can tell multiple different stories to different people. These unique archaeological events can however become even more meaningful and memorable encounters with the historic landscape and its hidden memories if the professional territory of contract archaeology could listen to and adapt to the interests and individual needs of the public.

In 2020 the archaeological contractor Stiftelsen Kulturmiljövård conducted a pre-excavation at the archaeological site consisting of an abandoned village, Eggeby, in the Swedish parish of Skärkind, Östergötland. It is a multitemporal place with more than a thousand years of history accumulated in the landscape, a treasure trove for collecting memory-objects and narrating stories about the people who lived there, both through historical records and through decoding the stored memories of finds and features.

The contract archaeology project used aspects of “public archaeology” as a tool for outreach rather than the traditional methods, in order to create more participation and dialogue in the project. Archaeologists could here be seen as custodians of space-time that transform the accumulated history of a place and objects into meaningful information and narratives. I participated as an archaeologist in the excavation, meanwhile conducting a case study on the dissem-

ination work and how the targeted public related to the archaeological process and site. In my presentation I will show a few solutions used in recent excavation projects and share some experiences.

A. DECONSTRUCTION AND RECONSTRUCTION OF ARCHAEOLOGY FOR 'THE WEST LINK' IN GOTHENBURG, SWEDEN

Abstract author(s): Bramstång Plura, Carina - Skredsvik, Andreas - Nordström, Emma - Nordin, Petra (National Historical Museums, The Archaeologists)

Abstract format: Poster

Several major archaeological discoveries have been made in Gothenburg in recent years. A medieval defensive tower, a stone sundial, testicle daggers, and several boat wrecks have appeared in the news. These are just some of the discoveries archaeologists made when investigating historical remains of national interest in Sweden's second largest town, Gothenburg.

There are several large infrastructure projects currently underway in Gothenburg, not least 'the west link' project (Västlänken) which includes a new rail tunnel with three underground stations. Extensive archaeological excavations are being carried out in connection with the project, the results of which will be used in exhibitions and in the landscaping of the new stations and surrounding areas.

Within the city's moat there are both the remains of fortifications as well as traces of the earliest residents of Gothenburg from when it was built in the 1620s. During the excavations an old harbour with several boat wrecks was discovered, making it possible for us to investigate shipping history, customs, and much more.

Outside Gothenburg's city moat, a medieval fortification on the hill Gullberg was investigated. The structures and artefacts from the fort inform us about both everyday chores and conflict at the medieval stronghold. Furthermore, the Johanneberg Estate gardens at Korsvägen, a farmland estate created to supply food to Gothenburg's inner city, were also excavated. The diverse history of these estates reflects almost 300 years of human endeavour, trade, and burgeoning industrialisation.

Together with the city council and other authorities, plans are being made to use the archaeological findings to highlight the city's historical narrative. Amongst other things, a tower from the Gullberg fort will be rebuilt, and the Johanneberg Estate Garden will be made into a public park. Exhibitions related to the excavation are also planned in the underground stations.

97 DEPOSITIONAL PRACTICES IN THE NEOLITHIC: CONTACTS, INTERACTIONS AND TRANSFORMATIONS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Iversen, Rune - Bjørnevad-Ahlqvist, Mathias (University of Copenhagen) - Hofmann, Daniela (University of Bergen)

Session format: Regular session

Neolithisation brings with it a changed character and focus on depositional practices. Neolithic depositions can take many forms and vary in complexity. Depositions are related to a wide range of features including pits, house structures, flint mines, stone axe quarries, enclosures, megalithic and non-megalithic monuments, middens or various parts of the landscape. Furthermore, their contents vary across regions and phases as they can hold pottery, figurines, flint and stone axes, sickles, weaponry, ornaments, food remains, animal bone and even (parts of) human individuals.

What can these depositions tell us about Neolithic societies and their contacts? Depositional practices contain relatively visible, 'public' elements and less observable characteristics, which would need more sustained, direct contact to pass between groups. Therefore, depositional practices were central for the creation of community identities, social cohesion and worldviews, potentially over large areas, but they also show numerous local and regional idiosyncrasies. These patterns of differences and similarities across and between regions can help us to tease out multiple possible links. In this, the details of depositional practices (e.g. fragmentation, arrangement, use of colour etc.) are as important as the items themselves and their location. By investigating sets of complex, but linked practices, we can begin to explore the character and intensity of interactions and communication between Neolithic societies and address the importance of a wide range of depositional practices for social reproduction and change.

With this session, we would like to focus on what depositions and their transformations can tell us about contacts and interaction between and within Neolithic communities. Hence, we welcome papers from all over the world focusing on a wide spectrum of Neolithic depositional practices and their material correlates.

1 UNDERSTANDING LATE NEOLITHIC SOCIAL IDENTITY IN LIGHT OF DEPOSITIONAL PRACTICES

Abstract author(s): Erdem, Deniz (Middle East Technical University)

Abstract format: Oral

In the Neolithic period, burial rituals were one of the important elements of the formation of the social structure. It is possible to say that a social life structured through human, object and space burials. In this context, burial rituals applied in Late Neolithic settlements (6500-5500) in a wide geography including Northern Mesopotamia, Northern Syria and Southeastern Anatolia regions were examined in two main groups as public and segregated. The aim of this study is to reveal the relationship between the ritual acts and the social structure in the region and to examine the object, human and space relations that the rituals point to in the Late Neolithic communities in general.

The study indicates that in the Late Neolithic Period burial practices for associating objects, places and people with each other were routinely practiced. The differences observed in the way these relations are established contain clues about the establishment of the social structure. Therefore, the boundaries drawn between “ritual” and “routine” need to be rethought in order to understand the social structure of the period and the nature of social transformation. On the other hand, the practice of burying objects or settlements with routine cycles seems to be a factor that prevents “alienation of objects” and thus accumulation of personal or group capital. However, new relationships that are tried to be established between ceramics, seals and similar portable objects, places and bodies; It points out that new alternatives are emerging in the perception of time-space and identities, and therefore in the methods of recording and controlling history.

2 DELIBERATE HOUSE BURNING IN THE LIGHT OF THE DEPOSITIONAL PRACTICES IN THE NEOLITHIC OF THE GREAT HUNGARIAN PLAIN

Abstract author(s): Füzesi, András (Hungarian National Museum - Magyar Nemzeti Múzeum) - Raczky, Pál - Szilágyi, Márton (Eötvös Loránd University) - Bittner, Bettina - Kovács, Gabriella (Hungarian National Museum - Magyar Nemzeti Múzeum)

Abstract format: Oral

The Great Hungarian Plain and its Neolithic communities had special regional characters due to the alternative path of the Neolithization process. The Neolithic cultures in the southern part of the Plain had strong south-eastern European relations through the water system of the Tisza river and its tributaries, while in the north they had few specific adaptations.

The early agricultural communities of eastern origin needed several centuries to domesticate the local natural environment. Depositional practices allowed us to emphasize certain aspects of everyday life. Neolithic communities deposited a selection of particular items to communicate the importance of related activities. Their depositional practices created special places in the landscape. These spots(/centres) of cultural landscapes condensed traces of certain subsistence activities and symbols of ritual life, while the (deposited?) items and conditions may have encoded the knowledge of Neolithic people. The subsistence practices reached their maximum efficiency in the Late Neolithic. Ritual life, including depositional practices, developed into a colourful mosaic system in this time.

Deliberate house burning was a widely used ritual practice. This led to the establishment of tells and tell-like settlements in the Late Neolithic (5000-4500 BC) of the Great Hungarian Plain. The complex and entangled ritual process incorporated various rites from earlier periods, such as ritual grinding, feasting, dancing, etc. However, a unique new feature appeared: the participants created a monument by furnishing the house, which provided a detailed picture of the former communities’ mental image of a household. Many such furnished houses have already been excavated in Hungary and its neighbours. Beyond a comparative analysis of these contexts, our presentation is strongly based on our current research in Hódmezővásárhely-Kökénydomb. In 2022, we started an excavation of a burnt house and its foreground, where much information could be detected about Late Neolithic depositional practices.

3 WASTE MANAGEMENT AND HOUSEHOLD’S ORGANISATION: THE LBK SITE OF TĚŠETICE-KYJOVICE (CZECH REPUBLIC)

Abstract author(s): Denis, Solène (CNRS UMR 8068 TEMPS) - Tóth, Peter (DAM, Masaryk University) - Plutniak, Sébastien (CNRS UMR7324) - Mališková, Johana - Hossa, Branko - Valent, Martin (DAM, Masaryk University)

Abstract format: Oral

In the LBK area, the population settling down led to villages, where farming communities inhabited longhouses which share similar features across Europe. However, in contrast to the uniform architecture, different conclusions are related to waste management and the activities connected with the life organisation within the village. These opposing

views can be summarised as follows: (1) archaeological material contained in the lateral pits is interpreted as directly related to the house activity; (2) contrasting to that, discards are interpreted as not directly related to the house activity but to other occupation phases of the village. The consequences of interpreting the house's activity and the economic organisation within the villages are enormous and need to be clarified to understand better the social organisation of the farming communities. These issues will be discussed in the example of the LBK site of Těšetice-Kyjovice (Czech Republic). Refitting analysis, in particular, is used to assess the relationships between a house and four pits. A particular approach, coined "Topological Study of Archaeological Refitting", will be applied to the pottery material. This method draws on concepts and procedures from graph theory to model the network of connections observed between refitting ceramic fragments. It will help to understand better the rhythm of filling formation and help to discuss the waste management system. The observation will be supported via the technological analysis of lithics and the identification of learning networks. Understanding the waste management of pottery and lithics will help test different scenarios of potential household interactions.

4 NOT EVERY PIT IS A PIT-HOUSE. LATE NEOLITHIC DEPOSITIONAL PRACTICES AT THE SITE DOLSKO – SPODNJE ŠKOVCE IN SLOVENIA

Abstract author(s): Tolar, Tjaša - Tožkan, Borut (ZRC SAZU, Institute of Archaeology) - Kramberger, Bine (Institute for the Protection of Cultural Heritage of Slovenia)

Abstract format: Oral

We are presenting the results of the study focusing on the deposition of pottery, stone tools, animal bones, and plant remains found in a large pit at the Late Neolithic site Dolsko – Spodnje Škovce in Slovenia. Pits of this kind are typical of Slovenian Late Neolithic sites, where they are most often interpreted as pit-houses. The present study includes the most comprehensive archaeobotanical data and analysis of animal bones to date in the context of such depositional practices in Slovenia.

The pit in question has a size of approximately 11 m × 7 m. Its irregular shape, the multi-layer deposition, the lack of architectural remains, the significant amount of pottery (6282 sherds) and animal bones (560 pieces), as well as fragments of charcoal and stone tools are all typical characteristics. Analyses of the distribution stone tools and pottery, archaeozoological and archaeobotanical analyses, and the results of radiocarbon dating gave us more detailed information on what was deposited in the pit, how and when.

Finally, a comparison with contemporary Late Neolithic sites in Slovenia and neighbouring regions enabled us to establish the differences and similarities between prehistoric pit depositions in different, but chronologically and culturally related regions, and the possible interactions between them.

5 LARGE SETTLEMENTS OF BRZEŚĆ KUJAWSKI CULTURE AS PLACES OF GRAVE DEPOSITION AND CEREMONIAL CENTERS (4350-4000 CAL BC)

Abstract author(s): Wiececzek, Kalina - Czerniak, Lech (Institute of Archaeology, University of Gdańsk)

Abstract format: Oral

In the "Danubian World", burying the dead within settlements is one of the typical phenomena characterizing burial practices, and has its roots in the distant heritage of the Anatolian Neolithic. However, in the Neolithic of Central Europe, this tendency had been gradually disappearing and in the second half of the 5th millennium it distinguished almost exclusively the Lowlands of present-day Poland and the Brześć Kujawski culture (4350-4000 cal BC; hereinafter: BKC). This seemingly conservative phenomenon is contrasted by a high amount of copper among grave offerings and a lot of diversity of grave goods. Isotopic studies confirmed the correlation between the presence or absence of copper in the graves and the diversity of the diet of the deceased (Budd et al. 2020. 'Antiquity').

The BKC settlement system was based on clusters consisting of farmsteads and hamlets surrounding a large settlement densely built up with long houses. The settlement had a central function, due to its location, size, and long period of use, but also because it was a burial place for the community of the entire cluster. The burial of the deceased could therefore take the form of a communal ceremony celebrating the return to the 'ancestral settlement'. This was conducive to the integration of the entire community, but also likely aided the public display of the status of the deceased, expressed through the grave goods. In the paper, we will present the results of the analysis of the relationship between the place of burial within the settlement (house interior, clay extraction pits, communal space, defensive ditches) and the sex, age and status of the deceased. We will also consider whether the appearance of rich grave goods present in the BKC refers to the position of individuals or rather, through these individuals, to the competing groups (probably extended households).

6 NEOLITHIC DEPOSITION PRACTICES AND THE CONNECTIONS BETWEEN CENTRAL AND NORTHERN EUROPE

Abstract author(s): Müller, Michael (Institute of Prehistory (FU Berlin))

Abstract format: Oral

The largest known number of depositions in Central and Northern Europe is from the time of the Funnelbeaker culture (4,100–2,800 BC). The most frequent objects composing these depositions are flint axe heads, followed by amber beads, ceramic vessels, copper items and flint blades.

In my paper, I will present some possible connections between depositional practices of the Funnelbeaker culture and Neolithic cultures of Central Europe between the 6th and 4th Millennium BC. Beginning with the Linear Pottery Culture (5500–5000 BC) and increasing in number in the following central European Middle Neolithic period (5000–4400 BC), these depositions seem to have been carried in the same manner over millennia. They all show a recurring selection of objects, with a prevalence of different types of stone axe heads, including their preforms, or raw materials. The items were often reaching extraordinary sizes and were placed in special arrangements at the borders of the inhabited areas.

When it comes to the origins of the Funnelbeaker deposition practices, it remains rather unlikely to find them in the preceding Ertebølle culture (5500–4100 BC), due to the quantitative lack of recurring hoards with stone tools, especially flint axe heads. Conversely, I will discuss the hypothesis that the bearers of the Michelsberg culture (4,400–3,500 BC), as possible initiators of the Funnelbeaker culture, could have transferred that model of Neolithic depositions into Northern Europe where it is even traceable until the Younger and Late Neolithic (2800–2200 BC). During the Funnelbeaker time, the deposition practices were further developed and continued in their own dynamic, which had a decisive influence on the developing strong social networks.

7 RITUALS OF CULINARY PRACTICES. DEPOSITIONS OF FOOD AND VESSELS IN THE MIDDLE NEOLITHIC FUNNEL BEAKER CULTURE OF DENMARK

Abstract author(s): Claudi-Hansen, Lone (Museum Vestsjælland)

Abstract format: Oral

Food is intimately woven to both rituals and daily life in the Middle Neolithic Funnel Beaker Culture (ca. 3300–2800 BC). The ritual sharing and sacrifice of food and vessels has strong economic, cultural, and ritual ties and food must have played a crucial role in negotiating social relations. In eastern Denmark vessels and food remains are generally found in three different depositional contexts: 1) in and outside the megalithic passage graves, 2) in wetlands as offerings and 3) in contexts of discard, storage and ritual deposits at settlements. It was not only the material qualities of the vessels that played a key role in rituals and everyday activities, but most of all their now vanished content - food and beverages. The use-wear traces on the vessels differ in the three different contexts, reflecting differences in conservation, but also a variety of uses prior to the deposit. In this paper, the use-wear traces on vessels are examined in order to investigate how the pottery was used prior to the deposit in contexts of respectively ritual and profane character. Was particular food associated with specific depositional practices?

8 VESSELS FOR THE ANCESTORS

Abstract author(s): Gebauer, Anne Birgitte (National Museum of Denmark)

Abstract format: Oral

The Neolithic period in southern Scandinavia marks the beginning of a range of depositional practices related to hoards on dry land, wetland sacrifices and the ancestor cult. Investments in depositions of different kinds increased considerably when ploughing was introduced and cultivated areas expanded about half a millennium after the introduction of agriculture and continued for about four to five centuries. During this period votive offering of pottery became an important part of the burial rites leading to a ceramic production of outstanding quality and level of decoration. The large contingent of different types of pots was probably the remains of burial feasts. The vessels communicate the identity and status of the sponsors of the event but also reveal contacts and interaction among communities locally and regionally. Different aspects of these complicated practices involve the use of different types of ritual and domestic pottery, arrangement of the vessels as well as different degrees of fragmentation. The complexity of the repeated offerings reflected an in-depth knowledge of tradition and competence within the religious sphere. These practices evolved in connection with the building of megalithic tombs with accessible chambers but continued for a period of 150–200 years after the construction. The competitive feasting that was part of the burial rites was thus prolonged for several generations. Eventually these large public events were replaced by more simple burial rites where the role of pottery was much reduced or completely replaced by depositions of flint axes. The aim of this paper is to discuss what depositions related to the ancestor cult in the Funnel Beaker Culture can tell us about the early farming communities in southern Scandinavia between 4000–2800 BC.

9 DEPOSITIONAL PRACTICES AS NETWORKS OF INTERACTION ACROSS THE NORTH SEA IN THE EARLY NEOLITHIC

Abstract author(s): Bjørnevad-Ahlqvist, Mathias (University of Copenhagen)

Abstract format: Oral

Why are there so many similarities in ritual aspects of Neolithic life across the North Sea? In this paper, we explore this question through an interdisciplinary and mixed-method social approach, investigating the potential interconnectivity between several case study areas in Denmark, Britain, and Ireland in the period c. 4000-3300 BC. Rather than focusing on the impressive monumental constructions that these regions share, we focus depositional practices, comparatively smaller scale and conventionally subject to less archaeological interest. In our combined approach, we employ diverse statistical analysis, qualitative observations, and interdisciplinary interpretive frameworks to investigate different forms of practices, including hoards, pit deposits and grave goods. Analysis of this material is used to discuss the connections and disconnections between these different forms of practices. We then extend these findings into a discussion of the scales of societal interaction and cultural transmission of beliefs and social behaviour, which may be said to support these practices, across different areas of the North Sea.

10 TREE THROWS, PITS AND PALAEOCHANNELS: DEPOSITION IN THE EARLY NEOLITHIC IN NORTH WEST BRITAIN

Abstract author(s): Dickson, Antony - Brown, Fraser - Evans, Helen (Oxford Archaeology North)

Abstract format: Oral

Recent excavations in front of a new road scheme at Windy Harbour, North Lancashire, England has revealed exciting new evidence for early Neolithic occupation including structures, hearths, middens and associated features. Occupation activity also included the deposition of artefacts and other cultural material in anthropogenic and natural features used as repositories for chipped stone, fragmented stone axes, shattered stone, Carinated bowl pottery and charred plant remains. The worked stone component included exotic material such as pitchstone from the Isle of Arran, Scotland, rock crystal and fragmented Group VI axe blades from the Langdale axe production sites in Cumbria. Current interpretations see this depositional activity enmeshed within the everyday routines of inhabitation and potentially relating to the final phase of occupation.

Sites elsewhere in the north west region have also produced evidence for structured deposition. For example, a palaeochannel at Stainton West, Carlisle, Cumbria contained wooden tridents (the only known comparators being from Ireland), other items of worked wood, de-hafted and intact Group VI axe blades, a large assemblage of coarse stone tools and flint blades made on raw material from outside the region. However, unlike the situation at Windy Harbour there was no evidence for occupation features, such as pits and structures, implying that deposition related to different ways of expressing inhabitation.

This paper will explore the contexts of early Neolithic deposition from across the region and explain the patterns of similarities and differences they represent. It will place the depositional practices within a chronological framework. It will also seek to interpret this activity within the context of landscape occupation at a time when community identities were undergoing change at the beginning of the Neolithic in the United Kingdom.

11 INDEBTED TO THE UNDERWORLD AND EACH OTHER? AN EXPLORATION OF DEPOSITION AT TWO NEOLITHIC MONUMENTS IN DORSET, S. ENGLAND

Abstract author(s): Greaney, Susan (University of Exeter)

Abstract format: Oral

A close examination of assemblages of artefact and ecofacts deposited within shafts during the Neolithic period can shed light on the engagements that people had with place, and with each other. This paper will explore depositional practices at two Neolithic monuments in Dorset in southern England, Maumbury Rings and Monkton-Up-Wimborne, monuments which both emulate natural sinkholes and shafts found nearby. By exploring the materials, colours, affordances, and associations of the deposits placed deep within them, the wider connections and relations of these assemblages will be traced. It will be argued that substances and objects can be involved in social relationships, and that the deposits in these shafts can shed light on specific negotiations between people, materials and the underworld, including debt relations. In turn, this can reveal potentially unequal relationships between different groups of people in the Neolithic period, whose lives were entangled with materials, objects and places, and the journeys between them.

HOUSE, MIDDEN AND PIT. UNDERSTANDING THE EVIDENCE FOR “THE BIG FEAST” DURING THE LATE NEOLITHIC IN ORKNEY, SCOTLAND

Abstract author(s): Becher, Julia (BioArCh, University of York; CEPAM, Université Côte d’Azur; Archaeometry Working Group, University of Tübingen) - Regert, Martine (CEPAM, Université Côte d’Azur) - Edmonds, Mark (Archaeology Department, University of York) - Card, Nick - Mitchell, Anne - Towers, Roy - Blatchford, Jan (University of the Highlands and Islands; Ness of Brodgar Trust) - Craig, Oliver (BioArCh, University of York)

Abstract format: Oral

The Late Neolithic in Britain is known for its remarkable ceremonial complexes, ranging from large stone circles to stone buildings dating between 3200 and 2200 cal. BC. Especially the Orcadian Neolithic, Scotland, belongs to one of the most prominent places within the political landscapes of the time. Recent excavations at the Ness of Brodgar revealed the largest pottery assemblages of its kind in Britain in addition to one of the largest bone collections in Neolithic Scotland allowing exceptional conditions for in-depth analysis to reconstruct the past. Distinctive Grooved Ware pottery vessels were deposited across the site’s many structures and spaces, including house structures, middens and pits. At least some of this pottery is likely to have been used in large-scale communal feasting, while other deposits may reflect the more day-to-day use of vessels for storage, cooking and food consumption.

Previous organic residue analysis (ORA) studies on Grooved Ware assemblages revealed clear markers for animal fat processing, however, small sample sets were used ($n < 40$) for inter-site comparisons without a clear understanding of intra-site functions. The presented organic residue study (ORA) investigates 340 pottery samples, comparing various activity zones within the Ness of Brodgar on a spatial and chronological scale. This represents the largest dataset collected from a single Grooved Ware site based on organic residues. Analyses of a combined biomarker and compound specific isotope approach (GC-MS and GC-C-IRMS) demonstrate excellent lipid preservation, with results showing the evidence of plant, ruminant adipose and dairy processing within the ceramic vessels. This allows us to investigate (1) possible changes in ceramic use over time, (2) possible differences between contexts, (3) the extent to which degree pottery uses reflect the resources available, and (4) if rather rare or specific resources, such as beeswax, oils, resins, or fish, were also being prepared in ceramic vessels.

A. AUROCH BUCRANES BURIALS IN A NEOLITHIC MICHELBERG WOODEN CASED WELL FROM UPPER RHINE PLAIN (ALSACE, FRANCE)

Abstract author(s): Raynaud, Karine (Bureau d’Etudes Eveha) - Ferrier, Antoine (INRAP)

Abstract format: Poster

As part of the construction of the Strasbourg ring road, several archaeological sites have been excavated between 2015 and 2017 on the low terrace of lehm, on the west bank of upper Rhine plain.

On one of these sites (Fegersheim Secteur 2) was discovered a large Neolithic settlement, with several storage pits, waste pits, human burials, water wells but without any post holes or architectural elements. Until further informed, material culture corresponds to the culture of Michelsberg, which begins in the 4th millennium. The remains, not very dense, are distributed up to 300 m on both sides of a thalweg occupied by two streams.

One of the water wells discovered in this archaeological context has a rectangular wooden casing, installed in the center of a vast excavation with a U-shaped profile. Two bucranes, one of an adult male auroch and the second belonging to a young male cattle, were discovered interstratified in the filling sediment of this large pit. They are laid flat, connecting by their bony ankles; this intentional deposit also include two whole pottery. If calibrated radiocarbon date is expected, ceramic identification lead to a middle Michelsberg chronology, well known in upper Rhine plain. In this poster, we will try to highlight the possible links between the bucrane deposit of Fegersheim and the tradition of faunal deposits in the enclosures maintained by the communities of Michelsberg. In addition, we will study the symbolic significance of this ritual deposit and try to show whether and how this practice, probably a foundation deposit related to water wells, could be considered new in the cultural area of Michelsberg.

SEASCAPES, SEALANES, AND MARITIME INFRASTRUCTURE IN THE LATE BRONZE AND EARLY IRON AGE MEDITERRANEAN

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Martin Garcia, Jose (The Hatter Laboratory) - Manolova, Tzveta (Université libre de Bruxelles) - Muñoz Sogas, Judith (University of Barcelona) - Mauro, Chiara (Universidad Complutense de Madrid)

Session format: Regular session

In Mediterranean archaeology, the importance of the sea extends far beyond a mere geographical label. It is an ever-present unifying variable that profoundly shaped the reality of communities living along its shores, bringing into

close contact peoples inhabiting three continents in a way impossible to achieve without it. Whereas the Late Bronze Age and Early Iron Age represent the first major turning point in the scale and intensity of Mediterranean-wide interconnectedness, the crucial role of maritime infrastructure (ships and harbours) in both enabling and actively shaping this profoundly impactful process remains vastly understudied compared to other archaeological markers of connectivity. Instead, ships are often treated as invisible conveyors, with little to no consideration of their usefulness in answering questions beyond that of technological developments and transfers. An integrated approach that considers maritime infrastructure within its broader cultural and socio-economic context can provide a much fuller picture in terms of the mechanisms and priorities behind the process of growing Mediterranean-wide interconnectivity. Ship-building traditions moreover offer an important and thus far largely overlooked perspective on the complex dynamics of the critical LBA-EIA transition, allowing to trace both remarkably long-lived practices and abrupt changes which can be meaningfully tied to broader historical and cultural phenomena.

We welcome papers dealing with maritime infrastructure (anchorage, harbours, ships), seascapes, maritime actors, long-distance networks and connectivity in the Mediterranean during the Late Bronze Age and Early Iron Ages.

ABSTRACTS

1 **POTENTIAL SAILING MOBILITY IN THE LATE BRONZE AND EARLY IRON AGES IN THE EASTERN MEDITERRANEAN: INTER-REGIONAL CHALLENGES AND INTRA-REGIONAL OPPORTUNITIES**

Abstract author(s): Gal, David (Department of Maritime Civilizations, University of Haifa)

Abstract format: Oral

A recent PhD research has developed new methods for measuring potential sailing mobility of Mediterranean merchant ships in Antiquity, both for direct sailing passages and for breeze assisted coastal sailing. Most previous quantitative works have evaluated sailing passages using averaged wind, consequently losing details of the characteristic variability of Mediterranean winds. Their sole measure of mobility has been a representation of sailing speed on direct crossings. Moreover, these Mediterranean studies have not considered the effect of human factors on mobility, for instance, the choice of whether to sail or to wait for better conditions. The developed methods use meteorological resources at the highest spatial and temporal resolutions to expose the recurring wind variabilities and patterns which are the key to potential mobility. The methodology converts meteorological 'big data' in the order of billions of records to millions of simulated sailing passages, providing a basis for statistical analysis of potential sailing mobility. Inclusion of criteria-based human factors, i.e. the assumed preferences and limits of the mariners of the period, provides practical measures of mobility, representing not only sailing speed, but also time spent waiting for favourable winds and the probability of conducting feasible passages at given times of the year.

In the eastern Mediterranean basin, these methods have been applied to explore the difficulties of westbound sailing during the summer season facing contrary Etesian winds. Both direct passages and breeze assisted coastal sailing have been examined and mobility bottlenecks have been identified. Conversely, the mapping of potential sailing mobility has also exposed opportunities for cross-wind passages under the effect of the same Etesian winds, leading to deeper understanding of mobility factors in intra-regional maritime trading links.

2 **PATTERNS OF MOVEMENT AND MOBILITY: THE PLACE OF SHIPS WITHIN NETWORKS**

Abstract author(s): Krieger, Anja (Independent Researcher)

Abstract format: Oral

It is generally agreed upon that ships form parts of networks. It is in their inherent nature to connect places and traveling by sea was oftentimes easier, and probably cheaper, than traveling over land. As a consequence, the use of network analysis has gained a lot of traction within the field of maritime archaeology within the past years to better understand the different degrees of interconnectedness within the Mediterranean. The application of network theory to archaeological data, however, brings with it several challenges. This paper discusses two recent approaches to maritime networks that specifically include data from shipwrecks: one is Thomas Tartaron's multi-scalar model of nested geographies for the Bronze Age and the other is Elizabeth Greene's analysis of individual ships as ego-networks. Drawing from both approaches, the talk's main focus of this paper will then be on discussing four LBA and EIA shipwrecks, Ulu Burun, Cape Gelidonya, Tanit, and Elissa, as examples of different patterns of mobility and movement within the Eastern Mediterranean.

3 **SAILING AT NIGHT: A QUANTITATIVE APPROACH TO NIGHTTIME VISIBILITY OF THE SHORES AND MARITIME TRAVEL IN LBA AND IBA**

Abstract author(s): Mauro, Chiara Maria (Universidad Complutense de Madrid) - Durastante, Fabio (Università di Pisa)

Abstract format: Oral

Recent advances made in the studies of ancient seafaring have repeatedly acknowledged the role played within the same by visibility. In particular, in the Mediterranean Sea—which is an almost enclosed maritime space filled with islands—mutual visibility had long stood at the heart of maritime connections, theoretically allowing one to go from one side to another without ever losing sight of the land. Since the '70 numerous studies have tried to evaluate from what distances the coast could be seen. However, the majority of these studies have frequently employed an over-simplified and incomplete treatment of 'visibility'. For this reason, the aim of this contribution is to foster a concept of visibility that is more inclusive and compliant with reality. Specifically, we would like to assess to what extent visibility could be reduced during nighttime and how the decrease in visibility at night could have possibly affected ancient seafaring practices within the Mediterranean context. Whilst the considerations that we express in this contribution could be virtually applied to any chronological context, we have decided to ground our contribution in the time frame between the LBA and the IBA (i.e. between the 14th and the 8th cent. BC). This choice has been motivated by two main observations. On the one hand, there are abundant testimonies referring to this period speaking in favour of the practice of nocturnal seafaring. On the other hand, during this period fixed maritime infrastructures aimed at improving visibility at night were still not fully developed. This means that—even if alternative measures to increase visibility at night might possibly have been already in use in certain maritime areas (e.g. fires burning on top of coastal towers or religious structures)—light signals were still not so widespread and its presence was not systematic along the Mediterranean shores.

4 **MARITIME TRADE NETWORKS AND INTERCONNECTIVITY IN THE LEVANTINE SOUTHERN COASTAL PLAIN DURING THE LATE BRONZE-IRON I TRANSITION**

Abstract author(s): Killebrew, Ann E. (The Pennsylvania State University)

Abstract format: Oral

This paper explores long-distance networks and connectivity in the Levantine southern coastal plain during the 14th through 12th centuries BCE. Two centuries of Egyptian imperial influence during the Late Bronze IIA–B created a relatively stable environment that facilitated long-distance trade and interconnectivity with the eastern Mediterranean world. However, increasing volatility during the final decades of the 13th and early 12th centuries BCE disrupted these networks. Following the withdrawal of New Kingdom Egypt from the southern Levant and the collapse of the Hittite empire, the established Late Bronze Age elite socio-economic structures suffered devastation. In its place, other less centralized polities survived the crisis and even flourished, as evidenced by more informal exchange networks, migration, colonization, and other social interactions. The Late Bronze II and the transition to the Iron I period will be examined at several key sites located in the southern coastal plain, including Ashdod, Tel Miqne-Ekron, and Ashkelon. These results will be compared and contrasted with the archaeological evidence emerging from neighboring coastal regions in the Levant.

5 **THE EMERGENCE OF THE PHOENICIAN MEDITERRANEAN PHENOMENON: ENVIRONMENT, HISTOIRE ÉVÈNEMENTIELLE AND AGENCY**

Abstract author(s): Gilboa, Ayelet (Zinman Institute of Archaeology, University of Haifa; School of Archaeology and Maritime Cultures, University of Haifa)

Abstract format: Oral

Regarding Levantine maritime activities after the collapse of the Bronze Age world, a near-consensus prevails among scholars: Since the 'Sea people' invaded large parts of the southern Levant, and possibly also of Syria, only the Lebanese coast remained unscathed, which is where maritime infrastructures, tradition and know-how remained, eventually generating the Phoenicians' westward maritime expansion. Instead, I argue that ample archaeological evidence demonstrates that what should be termed the earliest Iron Age maritime Phoenician ventures were first launched from the Carmel coast, today in northern Israel, mainly from its main harbour town at Tel Dor (subsequently to be joined by polities in south Lebanon). This was dictated primarily by environmental factors: Dor's natural anchorages, wind regime in the Eastern Mediterranean, landmarks visible by sailors from afar and the accessibility of mountains with their arboreal products close the sea. In addition, however, socio-political factors were at play: the collapse of imperial Egypt, of the Syrian coast, and not long afterwards—of the Cypriot Bronze Age apparatus. Considering all these aspects in tandem, alongside the role of individuals in the Levant and in Egypt in maritime connectivity, enables a comprehensive interpretation of the development of early Phoenician maritime endeavors.

6 **MEDITERRANEAN TRADE CIRCUITS. HOW DID CERAMICS TRAVEL IN THE LATE BRONZE AGE MEDITERRANEAN? THE CASE OF TELL ABU HAWAM**

Abstract author(s): Martin Garcia, Jose (The Hatter Laboratory)

Abstract format: Oral

Sailing largely depends on the sail type. Triangular and orthogonal sails are appropriate for upwind and crosswinds, while square sails are only suitable for tailwinds. During the Late Bronze Age, ships carried just one mast with a single square sail, being only able to navigate with tailwinds, preferably following the sea currents, which in the Mediterranean follow a counterclockwise circular trajectory.

As a result, many scholars defend that, in the Mediterranean, ships traveled in a circle following the main currents, stopping in almost every harbor along the way. However, the Mediterranean also has local currents and seasonal winds that allow ships to make shorter journeys, reducing travel costs and permitting navigation all year. Additionally, the political and economic alliances influenced trade relationships and routes.

Because of it, I think traders traveled in small harbor-specific circles. The difficulty is how to trace these individual connections. Through an analysis of the imported ceramics from the Late Bronze Age anchorage or proto harbor of Tell Abu Hawam, I will offer an example of specific harbor connections and a methodology to detect them.

7 **REGIONAL EFFECT OF RIVER SILTING ON MARITIME TRADE IN THE LATE BRONZE/IRON AGES: THE HAIFA/AKKO BAY AS AN EXAMPLE**

Abstract author(s): Artzy, Michal (Hatter Lab., RIMS, University of Haifa) - Giaime, Matthieu (Hatter Laboratory, School of Archaeology and Maritime Cultures, University of Haifa; ASM UMR5140, Université Montpellier 3, CNRS, MCC)

Abstract format: Oral

The gradual silting of the Qishon River on the Haifa/Akko Bay in the 14th-12th centuries BCE affected the maritime trade. Analysis of the geomorphological changes – at the scale of the Bay and at the Qishon mouth – concurrent with the imported ceramic from the ‘The lands of the Sea,’ Greece, Cyprus, the Levantine coast and Western Anatolia found at Tell Abu Hawam and Akko, point to a transformation in the nature of the imported ceramics of the period.

Both sites show a similar record of imported ceramics during the earlier years of the Late Bronze IIIb period, namely the 14th and first part of the 13th centuries BCE. Following the silting of the Qishon river, an increase in habitation and imports, albeit slightly varied, on the tops of ramparts of Tel Akko where the backdrop of the coast and the Na’aman River allowed for the continuation of the maritime trade into the later part of the 13th and early 12th centuries BCE.

8 **CHANGE VERSUS CONTINUITY ACROSS THE LBA-EIA TRANSITION: A VIEW FROM THE SHIPS**

Abstract author(s): Manolova, Tzveta (Université Libre de Bruxelles)

Abstract format: Oral

The transition between the Late Bronze and Early Iron Age in the eastern Mediterranean was a tumultuous period marked by profound geopolitical and social transformations. Not all regions however were impacted evenly, with some re-bouncing far quicker than others, while a handful of actors greatly benefitted from the ensuing power vacuum. One particularly important avenue for gaining a strategic advantage was the ability to maintain and expand long-distance maritime networks in the beginning stages of the Early Iron Age. Shipbuilding traditions offer an important and thus far largely overlooked perspective on this process and the varied regional responses, allowing to trace both remarkably long-lived practices and abrupt changes which can be meaningfully tied to broader historical and cultural phenomena. The paper will examine salient examples of Late Bronze age ship types that were either passed down or disappeared from regional shipbuilding traditions during the Early Iron Age, with a particular focus on the seafaring cultures of Cyprus and the Levant.

9 **SHIPS PASSING IN THE NIGHT: MARITIME INFRASTRUCTURE, POLITICAL ECONOMY, AND THE LIVED EXPERIENCE OF SAILORS**

Abstract author(s): Fuller, Elliott (University of Toronto)

Abstract format: Oral

Through the close contextual analysis of material assemblages from four Late Bronze Age Eastern Mediterranean foreshore structures, I offer a new interpretation which moves beyond purely morphological and functional analysis by employing a historical framework. In recent years, a debate has emerged over the role of the maritime infrastructure from the Minoan site of Kommos on Crete. One position, maintained by the site’s excavators, is that the infrastructure represents ship sheds—structures meant to house sailing ships and keep them dry during the winter

season. The other position, put forward by two coastal geoarchaeologists, is that they were storage areas for the goods offloaded from ships. While important for determining the function of the Kommos structure and Minoan nearshore infrastructure in general, this discourse has precluded broader syntheses of the data. Therefore, I intervene in this dialogue by reconsidering the evidence from Late Bronze Age Eastern Mediterranean foreshore buildings. Instead of focusing on their morphology, where most attention has been devoted, I examine their contents. Tableware, tools, personal trinkets, and hearths have been reported from several of these buildings in the Aegean and on Cyprus, but the findings have yet to be contextualized in existing interpretations of such structures. I argue that these finds represent the material remnants of temporary occupation of the structures by sailors calling into port. Such a proposal does not foreclose the other interpretations suggested above. Rather, I view harbour infrastructure as multifunctional, with the structures fulfilling different functions depending on the time of year and the needs of its users. I also consider the implications of my interpretation for broader issues of maritime exchange, political economy, and the lived experiences of sailors.

10 A LATE BRONZE AGE “NAVAL STATION” AT KALAMIANOS (SARONIC GULF), GREECE?

Abstract author(s): Pullen, Daniel (Florida State University)

Abstract format: Oral

The Saronic Harbors Archaeological Research Project (SHARP) has documented the Late Bronze Age harbor town at Kalamianos and its hinterlands, on the Saronic Gulf coast of the Corinthia, Greece, through intensive survey, architectural recording, and subsurface sonar. The small community of the Middle and earlier Late Bronze Age was expanded into a walled town of the Mycenaean palatial period with buildings and streets oriented to the harbor; substantial labor and capital investments in field terracing and buildings are also evident in the hinterland. Subsequent local subsidence and eustatic change near the end of or after the palatial period have made the harbor mostly unusable, and part of the town is now underwater. Twelve centuries later the Roman period geographer Strabo (1st cent. BCE-1st cent. CE) identified the town of Eiones on the Saronic Gulf, from the Homeric Catalogue of the Ships (Iliad Book 2), as a “naval station” (nafstathmon); his description of Eiones fits our understanding of the archaeology of Kalamianos and its harbor. That is, the people from the town of Mycenae came to Eiones (Kalamianos) in the palatial period, created a new town and naval station which later disappeared from view (most likely due to earthquake-induced subsidence), and now is no longer usable. The term “naval station” is mostly associated with military activities throughout Greek literature.

The implications of this identification of Kalamianos as a naval station are evaluated in light of our current understanding of the archaeology of maritime culture, both commercial and military, of the Mycenaeans and other Late Bronze Age peoples of the Aegean. The lack of identifiable maritime infrastructure outside of Crete, including at Kalamianos, suggests that such installations were not essential for maritime activities elsewhere in the Aegean.

11 THE GALLEY CULTURE OF THE AEGEAN FROM THE LATE BRONZE TO THE EARLY IRON AGE

Abstract author(s): Nakas, Ioannis (Independent researcher)

Abstract format: Oral

Towards the end of the Bronze Age a new type of oared vessel appears in the iconography of the Aegean. This new type of galley, a low, swift vessel equipped with a curved stern, a raised forecastle and a ram or cutwater, was most likely the first purpose-built warship in the region and survived the dramatic end of the Bronze Age and well into the Early Iron Age, becoming the ancestor of all later oared vessels of classical antiquity. Made for speed and manoeuvrability, it was an ideal ship for warfare, piracy and short travels within the unique seascapes of the archipelago. The predominance of this type of ship in iconography, even during the Submycenaean and Protogeometric periods, when representative art is nearly non-existent, indicates its importance in contemporary culture, something also reflected in the Homeric tradition. A galley culture must have thus existed within the communities of Late Bronze and Early Iron Age Aegean, a culture in which galleys played a great role both as functional vessels and as symbols of power, being the most advanced technological products of their time and in need of substantial resources and labour force to be built, maintained and operated. This galley culture and the role it played in the development of contemporary civilisation is the subject of this paper.

12 “GO TO THE DISTANCE”: LATE BRONZE AGE PORTS OF INTERACTIONS

Abstract author(s): Falezza, Angela (University of Oxford)

Abstract format: Oral

The Mediterranean Sea has constantly acted as an arena of interactions between independent areas and peoples, becoming a means of connectivity rather than division and allowing the exchange of artefacts, people and ideas. There is significant evidence for contacts between the Aegean world and Southern Italy in the Late Bronze Age. However, Aegean imports in Italy demonstrate shifting patterns of distribution and type of artefacts over this time. Moreover,

recent investigation on the process of social organisation of local communities in Late Bronze Age Southern Italy have shown profound differences from the contemporary Aegean palace societies. Today as in the past, different cultures have come together and interacted across the Mediterranean. These interactions have been influenced by many different factors which can be identified and studied.

Ports are naturally an important gateway for interactions across the Mediterranean Sea as the first point of contact for people travelling via sea, becoming place of gathering and interactions of different nature between cultures. I believe that ports provide a good scenario for investigating the social changes resulting from the interactions of different cultures, as the presence of facilities for both goods and their traders takes them beyond the economic sphere into the social one, providing cultural passage points. This paper will address whether the characteristics of ports of interactions were unique to specific geographical areas or whether were more widely shared across the Mediterranean. The identification across different ports of interactions of some common patterns of behaviour, such as the presence of communal feasting activities, suggests that similar dynamics of interactions were taking place between different cultures.

13 ON THE NATURE OF PHOENICIAN COMMERCE IN THE EBRO BASIN: AN ENDOGENOUS PERSPECTIVE

Abstract author(s): Muñoz Sogas, Judith - Álvarez, Ramon - Asensio, David - Jornet, Rafel - Menéndez, Pau - Morer, Jordi - Noguera, Jaume (University of Barcelona)

Abstract format: Oral

Many studies have tried to understand the nature of Phoenician commerce in the Western Mediterranean and the motives for these traders to exchange their products in the North-East of the Iberian Peninsula. In this context, indigenous societies have been ignored numerous times, and seen as acculturated or even inferior populations with no decision power in this exchange network.

However, evidence from the Ebro area has pointed out an endogenous explanation for these Phoenician seafarers to commercialize with indigenous groups. These exchanges seem to concentrate in areas where the presence of complex societies that include elites is attested prior to the arrival of foreign merchants. These Phoenicians would have supplied the local elite's demand for prestige goods, materialized in amphorae from the South of the Iberian Peninsula, destined to the commensality practices of the local elites.

These long-distance contacts are attested all over the Ebro basin, in different levels of intensity. Firstly, the maximum intensity area from the river-mouth, via Aldovesta, to the mining area of Molar-Bellmunt-Falset, and, secondly, a peripheral area beyond arriving at the region of Matarranya, reminding us that all cultural groups and their social complexities should be considered when attesting the nature of commerce.

99 SNOW- AND ICESCAPES: ARCHAEOLOGICAL AND CONCEPTUAL EXPLORATIONS OF FROZEN WORLDS

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Ilves, Kristin (University of Helsinki) - Hillerdal, Charlotta (University of Aberdeen)

Session format: Regular session

Any northerner is familiar with the transformative power of snow and ice that are literally creating different geographies in northern landscapes. There are even seasonal geographical features such as sea ice ridges forming every winter, sometimes given local place names of their own. Snow, ice and cold are part of a physical reality that has defined both personal and cultural identity of northerners as well as the identity of places. Yet the possibilities of the winter landscape remain largely unexplored in archaeological research.

Today, snow often creates chaos in transportation, frustrating rail commuters and travellers, and frozen waters are perceived to be void of motion hindering the movement of ships and the materials they contain. Historically, however, the northern winter roads on ice and snow were of utmost importance and freezing of the ground awaited. Compared to summer, long northern winters made it possible to utilize shorter networks through faster winter roads. Military campaigns in winter have been constitutive elements in the history of several Nordic regions. Frost-nails, mounts for shoes and horseshoes to protect from slipping on ice are the strongest and most frequent archaeological evidence associated with winter, snow, and ice. Archaeologists are also increasingly discovering skis, skates, sledges, and sleighs as well as remains of winter hay barns and trapping systems. Researchers are becoming more alert to archaeological signatures of day-to-day life in snowy landscapes.

Far from isolating, the frozen landscape provides ice roads and snowy transport routes, lays the ground for sociability, winter fairs and markets, facilitates lumbering, hunting, and trapping, and even war. It connects islands with the main-

land, but also forces ships to shore. In the far north, winter commands darkness and demands light. In this session we invite expeditions into the northern winter landscape, both physical and conceptual.

ABSTRACTS

1 NORTH OF THE WALL: ARCHAEO-ECOLOGICAL APPROACHES TO SCOTLAND'S ELUSIVE PALAEO-LITHIC PAST

Abstract author(s): Britton, Kate (University of Aberdeen)

Abstract format: Oral

For more than a century, Palaeolithic Scotland was missing from the textbooks, presumed non-existent. A low-density of archaeological finds was compounded by a research tradition that had persistently excluded the possibility of human settlement at the extreme edge of north-west Europe prior to the start of the Holocene (c.11,700 yrs ago). Perceptions of environmental hostility during the Late Glacial period in the region are at odds with decades of palaeoclimate and palaeoenvironmental research, and the recent discovery of unequivocal Late Upper Palaeolithic sites has finally provided indisputable evidence for human activity in Late Pleistocene Scotland. Research continues to be held back, however, by both a lack of widespread investigation and a lack of conventional archaeological finds – new approaches are needed.

With specific reference to the Late Upper Palaeolithic archaeology of Scotland, this talk will explore the perceptual barriers that can inhibit archaeological research in glaciated and deglaciating landscapes, as well as challenges of understanding the human past where little conventional archaeological evidence belies an undoubted human presence. This talk will introduce a new research initiative from the University of Aberdeen focused on the 'People, Animals, Landscapes and Environments of Late Glacial Scotland'. Using an archaeo-ecological approach centred on palaeontological (non-anthropogenic) faunal remains, PALaEOscot will employ radiocarbon dating, and biomolecular and isotopic analyses, to reconstruct Scotland's Late Pleistocene living landscapes. New data will be integrated with existing palaeo-environmental, -ecological and archaeological data, with the goal of modelling the constraints and potentials of contemporary human dispersals. This planned programme of research will illuminate human and animal life in Scotland at the end of the Last Ice Age and explore new ways of approaching low visibility archaeology in northern environments.

2 'ON THE ICE HOWEVER ONE NEVER, OR SELDOM, MEETS ANY DIFFICULTY'. FROZEN WORLDS OF THE NORTH, OLAUS MAGNUS AND ARCHAEOLOGY

Abstract author(s): Ilves, Kristin (University of Helsinki)

Abstract format: Oral

In 1518-19, Olaus Magnus – a Swedish scholar and the last (nominal) Catholic archbishop of Uppsala, travelled to the northern parts of Fenno-Scandinavia on behalf of the Vatican authorities to collect information about the region's nature as well as the people and their customs, everyday life, beliefs, and folklore. Many years after his journey, in 1539, Olaus Magnus published a map, today known as *Carta marina*, one of the largest printed maps of its time. In 1555, he published an extensive, more than 800-paged work titled *Historia de Gentibus Septentrionalibus* – A Description of the Northern Peoples. The book, one of the oldest ethnological studies in Europe, was intended to complement the map, and many illustrations in this historical account are redrawings of details from the map. Both works represent a mixture of facts and fantasy but are nonetheless considered to provide many valuable insights into the 16th century North. Close-ups of *Carta marina* and descriptions in *Historia* are full of information and demonstrate the presence and vitality of life and movement both on land and the seas, which were clearly heavily trafficked also during winter-time. It seems moreover that in the book there is almost always winter. This contrasts with the archaeological studies of past life in Northern areas whereat winter, snow and ice have been rendered marginal and insignificant. In this contribution I would like to give an overview of how winter appears in the work of Olaus Magnus, with an interconnected emphasis on the possibility of archaeologically studying maritime networks in frozen worlds.

3 URBAN WINTER LIFE AND THE SEASONALITY OF SOCIAL ORGANISATION

Abstract author(s): Haugan, Kristine (Museum of Cultural History, University of Oslo)

Abstract format: Oral

Seasonal transformations of landscapes is a concept often discussed in relation to seasonal settlements and landscape archaeology, but rarely studied within urban archaeology. With this paper, I explore the frozen world of medieval Oslo by engaging a combination of materials, stories and spatial aspects to approach the seasonality of social organisation.

The physical nature and circumstance of medieval Oslo changed drastically from season to season. As a summer town, Oslo flourished through the Middle Ages, slowly turning into a dominant port of Eastern Norway. As a winter town, however, Oslo's situation in the very depth of the Oslo fjord made it completely unapproachable from the sea. This does not mean that urban life came to a halt during those winter months. Although still unpractical, land travel was more pleasant in winter than in summer and objects such as sledges portrays activities related to travel and trade. The frozen bay confining the town simultaneously allowed for a temporary, but recurring, urban space. Inhabitants of Oslo made the most of this space, utilising the ice surface as a workplace, a recreational area, and even a space for fighting battles on foot.

In this paper, I explore the materiality and spatiality of urban winter life in medieval Oslo as a way to approach the concept of seasonality. Even though research on seasonal aspects of society has a long history within e.g. prehistorical settlement archaeology, the concept has these last, few years been increasingly explored within a wider range of archaeologies.

4 ANCIENT HIGHWAYS ON SNOW AND ICE

Abstract author(s): Lindstrom, Torill Christine (University of Bergen) - Zubrow, Ezra (University at Buffalo)

Abstract format: Oral

Snow and ice can cause all kinds of troubles, even accidents, in our modern transportation, travelling, commuting, and communication. But it was not necessarily so in ancient times. Admittedly, large amounts of newly fallen snow would have caused problems also then, but when the snow had settled, become compact, perhaps even with a hard crust, it created wonderful opportunities for travelling far and fast, even between remote areas. Ice provided similar advantages on lakes and rivers. Hardangervidda, the largest highland plateau in Northern Europe, separates the eastern and western parts of Norway, – but also connects them. Normannsslepene, paths across Hardangervidda, may be thousands of years old, and were used all year round, some routes primarily in late winter. This paper will present the traditions, various means of transport (skis, sledges, “sleper”, horses, dogs), the varied uses of the paths (hunting, moving cattle, people, goods, bishops); and the different peoples using them, continuously, from Mesolithic hunter-gatherers to modern groups. In addition, comparisons will be made to other ancient highways on snow and ice in the northern world including those used by Finns, Inuits, Tungus, Chukchees, Samis, and others. – Maps and pictures will be presented

5 DASHING THROUGH THE SNOW: AN INTERDISCIPLINARY EXAMINATION OF HORSES & WINTER TRAVEL IN VIKING AGE SCANDINAVIA

Abstract author(s): Ita, Seluvaia - Rose, Samantha (University of Aberdeen)

Abstract format: Oral

Rather than have the winter mean a time of survival, what if the winter months transformed landscapes inaccessible in summer into possibilities? What would this transformation mean in the “spiritual” aspect of earth, the Otherworld, and one’s mindset with a landscape that is ever changing? What material culture can be found to suggest this new access and what do their context suggest about the conceptual ideas of landscapes and seasonality? Like waterways, bogs, or forests, wintered landscapes were liminal spaces. In some Icelandic sagas, the otherworldly activity increases with the coming of winter. In these stories, hauntings get more and more persistent around Jól. The pagan origins of Jól, although unknown, suggest that winter was not an inactive time of year since, as seen throughout Heimskringla, people would travel from location to location to celebrate. This requires access and the ability to navigate a frozen world of powdery snow and treacherous ice, requiring both human and animal gear, in particular horse crampons (broddar). Horses as both physical and mythological creatures can access nearly any landscape, and the presence of skeletal remains and equipment in graves is significant. In this talk, archaeological finds are contextualized with the written accounts and vice versa, balancing what people thought with what people left behind, leading to explorations in living landscapes and the Viking Age Norse role in the cosmos.

6 LETS SKATE TOGETHER - BONE SKATERS AS MEANS OF TRANSPORT

Abstract author(s): Messal, Sebastian (Lower Saxony State Service for Cultural Heritage)

Abstract format: Oral

Ice skates made of bone – usually made from the metapodia of cattle or horse – were used to improve the mobility in snow- and icescapes. During winter, frozen lakes and rivers had to be seasonal used as transportation routes to connect frozen landscapes and bone skates could be used to move heavy loads over ice and snow. Bone skates are therefore known to be very numerous from Northern Europe and especially in the North and Baltic Sea regions. Their use can apparently be traced back to the Neolithic period, but bones skaters only appear in larger numbers from the Roman Iron Age onwards. Their peak as means of transport in terms of quantity was in the early Middle Ages, and

they can be found in large numbers within find assemblages e.g. from Slavic fortifications and settlements along the southern Baltic coast. Written and pictorial sources even testify to the use of bones skates up to modern times.

The paper wants to summarise the actual state of research and to present a general overview about this artefact type associated with winter, snow and ice.

7 WINTER LANDSCAPES OF NORTHERN EUROPE – SEASONALITY AND LANDSCAPES IN STONE AGE ROCK ART

Abstract author(s): Gjerde, Jan Magne (NIKU - Norwegian Institute for Cultural Heritage Research)

Abstract format: Oral

Temporal changes in the landscape are of vital importance for hunter-fisher-gatherers. The surroundings and temporal changes guided activities and the way of organizing lifeways of hunter-fisher-gatherers in northern Europe throughout the past. This would differ within the regions of northern Europe, e.g., coastal northern Norway, inland central Sweden, or lake districts of Finland. Living in winter landscapes, the cynegetic activities of hunter-fisher-gatherers in the north would change dramatically with the seasons of the year. These changes are represented in the rock art by depictions of scenes and compositions related to “seasonal” activities where even animals and the morphology of the animals indicate the time of year. Stone Age rock art is a window to some of the major innovations important to people living in winter landscapes (skis, snowshoes) or seascapes of the north (boats). Most Stone Age rock art sites would have been accessible throughout the year. Rock carvings in the tidal zone and near rapids would be free of snow during the winter months, while the paintings on vertical rock cliffs would be exposed and even more visible and accessible in winter. The canvas of the study is comprehensive fieldwork during the last 20 years in northern Europe, studying rock art, rock art sites and their location during different seasons of the year. I furthermore argue temporal changes in nature have implications not just for the interpretation of rock art and rock art sites. Moreover, living in winter landscapes would have been important for people’s movement in seascapes and landscapes and part of their geographical knowledge during the Stone Age of northernmost Europe. In turn this would have impact on how we study and interpret the lifeways of people inhabiting Frozen Worlds of the past.

8 ‘THERE’S A CERTAIN SLANT OF LIGHT’* THE INTERPLAY OF LIGHT AND DARKNESS, ICE AND SNOW IN THE NORTHERN FENNOSCANDIAN WINTER

Abstract author(s): Hillerdal, Charlotta (Department of Archaeology, St. Marys Building, University of Aberdeen)

Abstract format: Oral

Winter holds northern Fennoscandia in its grip for six months of the year. In conceptual terms winter is often imagined as hostile and motionless, a frozen world waiting to be awakened by spring, engulfed by cold and darkness.

But even in the darkest winter you will have the interplay of light; when the midwinter sky brightens with colour for a few hours even though the sun won’t make it over the horizon, in the perfect reflective surface of a snow-covered lake under the full moon on a crisp winter’s night, when the sky comes alive with the Northern lights - the fire foxes, the ancient souls, faint reflections of battle.

Like snow and ice, light and darkness are variable and dynamic – defining space, restricting and enabling movement and transportation, capturing the mind.

In this presentation I want to explore the interplay of light and darkness in the premodern Fennoscandian winter landscape and the possibilities and limitations the play of light offered the human inhabitants of this frozen world.

*Emily Dickinson

9 WALKING ON THIN ICE: NEW METHODS EXPLORING VITAMIN D STATUS IN THE PAST AND A CASE STUDY FROM NUNALLEQ, ALASKA

Abstract author(s): Czére, Orsolya (University of Aberdeen) - De Roos, Baukje - Duncan, Gary (The Rowett Institute, University of Aberdeen) - Britton, Kate (University of Aberdeen)

Abstract format: Oral

Vitamin D deficiency is linked to a wide range of adverse health effects, the risk of which are increased for populations living at latitudinal extremes where limitations are placed on the dermal synthesis of vitamin D₃ due to insufficient sunlight, particularly during winter. This represents a significant health challenge for populations living in the circum-polar north, past and present. The consumption of food sources with high vitamin D content, however, can mediate this risk. Indeed, traditional subsistence strategies in high-latitude areas are often focused on food sources rich in vitamin D₃, such as salmon and marine mammals.

Recent developments in biomedical sciences have offered non-invasive means of quantifying vitamin D status in individuals through the determination of 25(OH)D₃ content in hair. Where this tissue is preserved, this technique has

the potential to allow an empirical indication of vitamin D status in archaeological individuals and can permit co-analysis with dietary indicators. Here, we will present intra-strand 25(OH)D₃ data extracted from archaeological hair samples for the first time. Our case study focuses on hair recovered from non-mortuary contexts from the pre-contact Yup'ik site of Nunalleq (1450-1650 AD), Alaska. The detection of seasonal variability (d₁₈O, d₂H) of 25(OH)D₃ content in incremental samples of hair, in tandem with the analysis of dietary (d₁₃C, d₁₅N) indicators, reveals important new insights into dietary seasonality, and links to vitamin D status at the site. The potential role traditional subsistence foods play in contemporary vitamin D health will also be explored.

We warmly thank Qanirtuuq Inc, Nunalleq Museum, and the people of Quinagak for permissions to undertake this research.

102 MESOLITHIC-NEOLITHIC TRANSITIONS [PAM]

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Templer, Michael (Research Associate, University of Neuchâtel, FLSH, Institut de Préhistoire) - Paraskevi, Elefanti (Research fellow, University of the Peloponnese, Laboratory of Maritime Archaeology, Department of History, Archaeology and Cultural Management) - Måge, Bjørnar (Museum Lolland-Falster) - Soares, Joaquina (UNIARQ-Archaeological Centre of the University of Lisbon and MAEDS - Museum of Archaeology and Ethnography of the Setúbal District/AMRS)

Session format: Regular session

The aims of this session are to present recent archaeological evidence or interpretations regarding Mesolithic/Neolithic transitions, as well as regional syntheses, from as many sites or regions as possible, and thus contribute to the broader understanding of this key period in the evolution of humankind. A Mesolithic hunter-gatherer with a pot is no more to be labelled Neolithic than are the present-day hunter-gatherers who have largely succeeded in maintaining their traditional life-ways, notwithstanding having acquired some present-day industrial attributes. The 'either/or' dichotomy and arbitrary dating of the 'event' is an academic convention which is giving way to a growing appreciation of the complexity and duration of the Mesolithic/Neolithic transitions across Europe. Contact between migrant Neolithic agro-pastoralists, with their specific life-ways, tool-kits and potentially different life-views, with incumbent Mesolithic hunter-gatherers (and sometimes collectors and fishers as well) took many and diverse forms. Whilst it is clear that over time the Neolithic way of life prevailed, the transitions to farming or assimilation into farming communities could have been more or less rapid, although in some instances they are known to have taken almost a millennium.

ABSTRACTS

1 THE MESOLITHIC-NEOLITHIC TRANSITION IN THE NORTHERN PONTIC REGION

Abstract author(s): Demchenko, Olha (Odessa I.I. Mechnikov National University)

Abstract format: Oral

The mainstream neolithization hypothesis, dominant in current Ukrainian scholarly, was proposed in the middle of the 20th century. It concentrates on ceramics and posits an early neolithization of the Northern Pontic Region at the end of the 7th mill. BCE, yet it distorts the logic of the historical processes and artificially separates this region from the current scheme of European Neolithization. The very early chronology also raises numerous doubts. Radiocarbon dates are represented unevenly. Some old assays were refuted by new ones obtained recently. The archaeological indicators of agrarian lifestyles remain ill-defined. A recent review of previously studied osteological faunal remains from several sites has shown the absence of domesticates. There are no reliable paleobotanical studies that could test the agrarian lifestyle. Despite the numerous known cemeteries and art objects, the symbolic aspects of the meso-neolithic transition dynamics and the innovations in material culture (ceramics) lack adequate attention. We consider the Meso-Neolithic transition period in the region lasted for about a thousand years and represented a spectrum of hunter-fishers-gatherer strategies broader. Three main sub-regions can be distinguished here: the Bug-Dniester region as the zone closest to the Neolithic cultures of SE Europe, with the highest rate of Neolithic items among local foragers; Azov Sea region occupied by foragers of the steppe plain zone with clues of animal husbandry and Western Asian influences; and Dnipro Rapids riverine region frequented by forager-fisher societies. Neolithic material innovations occurred in an uneven and punctuated fashion and did not lead to cardinal changes. Endogenous factors (e.g. favorable socio-economic conditions shaped by local foragers) played a crucial role in the Mesolithic-Neolithic transition.

2 THE MESOLITHIC-NEOLITHIC TRANSITION IN THE AEGEAN: A REVIEW OF THE GREEK EVIDENCE

Abstract author(s): Elefanti, Paraskevi (University of the Peloponnese, The Maritime Archaeology Laboratory)

Abstract format: Oral

Human settlement history and interaction during the Final Upper Palaeolithic, Mesolithic and initial Neolithic is one of the most hotly debated issues in Aegean prehistory. It is closely linked with two current research themes. How did hunter-gatherer societies adapt to the changing conditions of the Holocene and how did the long-lived hunter-gatherer way of life come to an end with the beginning of the Neolithic. The origin and establishment of the first Neolithic farming communities in Greece has raised vivid academic discourse over the last decades as it largely encapsulated two contrasting models, the indigenist and diffusionist. A critical point in the discussion of how the earliest farmers constructed their brave new world, either founding themselves in empty, unfamiliar and possibly hostile territories or on familiar lands that had the chance to accustomed themselves to after long term interactions with the indigenist populations is the Mesolithic period. The archaeological footprint of this period, however, is extremely vague. A number of factors count to this effect, including the short duration of the period spanning from the beginning of the Holocene at around 11,7 ka BP until the appearance of established Neolithic farming communities in Greece by at least 8,5 ka BP, the lack of archetypical technological traits, the few excavated and securely dated sites and possible sparse settlement distribution. In this paper I shall take a closer look at the very thin slice of the chronological phase attributed to the Greek Mesolithic by reviewing the main cultural traits in settlement, subsistence and technology as they have been formulated over the last decades of research, in order to reassess the cultural reality in which incoming farmers were one way or another enmeshed.

3 A NEW APPROACH TO THE CULTURAL, SOCIAL, AND ECONOMIC DOMESTICATION OF SICILY

Abstract author(s): Speciale, Claudia (IPHES-CERCA - Catalan Institute of Human Palaeoecology and Social Evolution; Department of Historical Studies - University of Gothenburg) - Giannitrapani, Enrico (Independent Researcher) - Forgia, Vincenza (Department of Culture and Societies - University of Palermo) - Bazan, Giuseppe (Department of Biological, Chemical and Pharmaceutical Sciences and Techniques - STEBICEF, University of Palermo) - Gullì, Domenica (Archaeological Superintendence of Agrigento, Sicily) - Iovino, Maria Rosa (Independent Researcher) - Lo Vetro, Domenico (Department of History, Archaeology, Geography, Arts - SAGAS, University of Florence)

Abstract format: Oral

The neolithisation of Sicily, the largest of the Mediterranean islands, conveniently placed at the crossroads of the routes from North to South and from East to West, has been a relatively recent issue within the debate dealing with the acquisition of the Neolithic lifeways. The narrative for the beginning of the Neolithic in Sicily has long suggested it took place on the island only in an advanced phase, with the arrival from the eastern Mediterranean of the elements of the “Neolithic package” already developed, through the cultural mediation of south-east Italy or directly from the East. Only after excavating some key sites in western Sicily, such as Uzzo and Kronio caves, has an early Neolithic phase been defined, although controversially accepted and interpreted. However, the debate has been limited to whether such an early phase originated here through diffusion or as an evolutionary process developed by the last hunter-gatherer communities. Crucial aspects such as the different modes of production, interaction with the environmental resources, and social structures have yet to be fully addressed. The appropriate question to ask to the archaeological record should be not just how Sicily entered the domestication process, but also why. The classificatory perspective widely adopted to interpret the Sicilian prehistory further constrains the discussion, leaving room for the acritical acceptance of a rigid dichotomy: societies

classed as hunter-gatherers did not have domesticates, while any societies with domesticates had agriculture. There is little space for a “middle ground” that, instead, is surprisingly large, quite diverse and sometimes long-lasting in other Mediterranean contexts. In the contribution, therefore, we aim to explore the possible existence of such a “middle ground” through an analytical enquiry into the main cultural, economic, chronological and paleoenvironmental aspects which characterise the late Mesolithic and the Early Neolithic (~7000-5000 cal BCE) of the island.

4 COLOURFUL TRANSITIONS: CHANGES IN OCHRE USAGE PATTERNS AMONG THE MESOLITHIC AND EARLY NEOLITHIC SOCIETIES IN CENTRAL AND EASTERN BALKANS

Abstract author(s): Kosciuk-Zalupka, Julia (independent researcher)

Abstract format: Oral

Usage of colorants, and ochre among those, could be perceived as a typical element of culture of the prehistoric societies. It was utilized in various forms in both secular and sacral contexts.

For this short study, there were taken under consideration terrains of Central and Eastern Balkans. Thanks to the observation of a wider chronological horizon, starting from the Mesolithic and continuing into the Early Neolithic, there could be noticed changes in the patterns of ochre utilization. The pigment was discovered in the archeological layers of 40 sites. Both utilitarian and sacral contexts were described. Yet, the most important feature was the slight transition in the proportions of ochre appearance. In the older, Mesolithic layers, that colourant was connected to both of the mentioned spheres, with appearance in graves and on the tools of everyday use. Nevertheless, the mortuary customs of the societies inhabiting especially the Danube Gorges changed slightly during the transitional period: in the older graves whole bodies were covered with pigments (ochre or graphite), whereas in the younger ones — ochre was discovered on females and kids bodies, localized on their pubic areas. Moreover, the numbers of utilitarian discoveries with ochre were dominating during the Mesolithic and the transitional period. Later, in the Early Neolithic, the number of the utilitarian discoveries decreased, showing a growing interest in the equipping of the graves with various goods, including ochre lumps or powder.

Such decrease of ochre traces on tools could indicate the general changes, appearing in the material culture. On the other hand, intensification of adorning of the deceased with red pigments strongly suggests also transitions in the ritual sphere, with simultaneous gaining on meaning of the symbolism of colours.

5 **TAKING THEIR TIME: EMERGING EVIDENCE FOR THE LATE MESOLITHIC AND EARLY NEOLITHIC TRANSITION IN THE EASTERN IRISH SEA ZONE**

Abstract author(s): Brown, Fraser - Dickson, Antony - Evans, Helen (Oxford Archaeology)

Abstract format: Oral

Recent excavations for the UK's National Highways' Windy Harbour to Skippool road development (near to Poulton le Fylde, Lancashire, north-west England), have revealed exciting new evidence for late Mesolithic and early Neolithic inhabitation. Of particular interest was the repeated occupation of the same locations, by late Mesolithic and early Neolithic communities, along the wetland dryland interface of the Lytham/Skippool valley. This took place within a dynamic, liminal, landscape, which was subject to a series of marine transgressions/regressions. Consequently, the stratigraphic, artefactual and palaeoenvironmental evidence was well preserved in anoxic environments. Domestic structures dating to both the Mesolithic and Neolithic periods have been recorded, along with evidence for votive practices and a wide range of artefact assemblages, middens, hearths and reworked tree throws. Preliminary dating from some of the sites has produced radiocarbon dates spanning the late fifth to early fourth millennia cal BC, suggesting some continuity across the Mesolithic/Neolithic cultural horizon. This potentially chimes with the evidence from other sites across the north-west region, most notably Stainton West, near to Carlisle.

This presentation will describe the new evidence and discuss it in its regional context, using the results from recent commercial excavations and community fieldwalking surveys. An interpretation will then be proposed, in accordance with the themes of the session overall.

6 **INVESTIGATING THE TRANSITION TO THE NEOLITHIC IN BRITAIN THROUGH LIPID RESIDUE ANALYSES AND COMPOUND-SPECIFIC RADIOCARBON DATING**

Abstract author(s): Wiltshire, Isabel (Organic Geochemistry Unit, School of Chemistry, University of Bristol) - Cramp, Lucy (Department of Anthropology and Archaeology, University of Bristol) - Knowles, Timothy (Bristol Radiocarbon Accelerator Mass Spectrometry Facility, School of Chemistry, University of Bristol) - Pollard, Joshua (Archaeology, School of Humanities, University of Southampton)

Abstract format: Oral

There has been much debate regarding the timing, origins and spread of Neolithic material culture and practices in Britain and Ireland. The beginning of the Neolithic period in Britain is usually placed around the start of the 4th millennium BC, or slightly earlier, when new evidence for structures, practices and material culture (including ceramics) emerge. Archaeogenetic data has provided strong evidence that the introduction of agriculture was principally the result of migration by continental farmers to Britain. However the nature of this migration, its timings and potential origins, and how the Neolithic subsequently spread and became established in Britain are still in question.

Ceramics were a novel technology introduced during the transition to the Neolithic in Britain, and have been recovered from some of the earliest Neolithic contexts across the country. They therefore provide an invaluable resource for investigating this transition period. Lipids preserved in the clay of archaeological pottery can be identified and characterised using cutting-edge analytical techniques to provide information on vessel function, diet, and subsistence practices. Furthermore, a novel methodology for the compound-specific radiocarbon analysis of absorbed fatty acids in pottery allows for the direct dating of ceramics and the opportunity to date regions or periods where traditionally datable materials are rare or absent.

Here, over 600 early Neolithic pottery sherds from across England, Wales and Scotland were analysed and 40 new compound-specific radiocarbon dates were obtained on fatty acids from these vessels. These analyses provide new insight into early Neolithic diet, pottery form and function, and the timings of the origin and spread of ceramics, which taken together produce a more nuanced narrative for the transition to the Neolithic in Britain.

7 NEOLITHIZATION LIGHT, A PERSPECTIVE ON THE MESOLITHIC/NEOLITHIC TRANSITION ON LOLLAND IN SOUTHERN DENMARK

Abstract author(s): Måge, Bjørnar (Museum Lolland-Falster)

Abstract format: Oral

From 2013 to 2022, Museum Lolland Falster carried out extensive archaeological investigations prior to the construction of the Fixed Link tunnel under the Fehmarn belt. During the investigations, we uncovered an entire Stone Age landscape with a fjord, beach areas and settlements in the hinterland.

The most intensive use of the coastal area was proven from the last part of the Mesolithic and up through the Neolithic. The material testifies that, even though there were some changes in the way of life in the transition between the Mesolithic and the Neolithic, there was also a high degree of continuity.

Even though the population in the area seemingly started to use ceramics and keep a small livestock already in the late part of the Mesolithic, many other elements of their daily life continued as before. For instance, ritual depositions of axes, spears and other objects in the shallow fjord started at the end of the Mesolithic and continued well into the Neolithic period.

Fishing in the early Neolithic was, as in the Mesolithic, to a large extent only done with leisters.

Our results show that the introduction of agriculture was a long and gradual process in the area and the various Neolithic elements did not come as a single package but more bit by bit.

Not before 6-700 years into the Neolithic, more significant changes in traditions appear: It is then, that the fishing strategy changed with the establishment of large stationary fishing facilities and the introduction of new grave forms with the construction of large stone graves. There is also a change in the ritual deposition pattern and indications for more grain cultivation are found.

8 EARLY ANIMAL MANAGEMENT IN THE DUTCH WETLANDS: NEW MULTI-PROXY EVIDENCE ON THE TRANSITION TO FARMING IN NORTHERN EUROPE

Abstract author(s): Brusgaard, Nathalie - Kooistra, Jildou (University of Groningen) - Kootker, Lisette (Vrije Universiteit Amsterdam) - Schepers, Mans - Raemaekers, Daan - Çakiırlar, Canan (University of Groningen)

Abstract format: Oral

The timing and nature of the Mesolithic-Neolithic transition in the Netherlands, north of the Linearbandkeramik (LBK) zone, is unresolved. Despite a wealth of well-preserved sites and faunal assemblages, these Dutch wetlands have remained behind in the northern Europe debate, owing partly to the lack of new methodological applications and multi-proxy analyses. This paper presents the results of extensive stable isotopic ($\delta^{13}C$, $\delta^{15}N$, $\delta^{18}O$, $87Sr/86Sr$) and zooarchaeological analyses carried out on cattle/aurochs, pigs/wild boar, and sheep/goats, integrated with archaeobotanical insights, from Neolithic Swifterbant Culture sites in the Dutch wetlands. These new data are part of the culmination of the 3-year project 'The Emergence of Domesticated Animals in the Netherlands'.

The stable isotopic and zooarchaeological analyses provide new evidence for the earliest cattle management north of the LBK zone. Moreover, they demonstrate the flexibility of prehistoric societies in northern Europe. The findings prompt reconsideration of sweeping statements about the Neolithisation process north of the LBK zone to make space for more regional approaches and local trajectories.

9 GRADUAL OR PUNCTUATED? TIMING THE FIRST AGRICULTURE AND ANIMAL HUSBANDRY IN THE DUTCH WETLANDS

Abstract author(s): Dreshaj, Merita (Groningen Institute of Archaeology)

Abstract format: Oral

The fifth millennium BCE in the Dutch wetlands witnessed several remarkable novelties in the subsistence patterns of Swifterbant culture, namely the emergence of pottery production, animal husbandry, and cereal cultivation. Given the importance of these changes and the perplexing nature of the data, much debate has centred on the timing and duration of these events. Because these novelties appear to occur across the entire fifth millennium BCE, the most popular model is that of a gradual and long transition to agriculture, triggered by the contact with LBK culture from 5300 BCE onwards. Short Early and Short Late models, on the other hand, stress the punctuated nature of these processes. To investigate this, we selected the keystone sites featuring the earliest evidence of domesticated animals,

animal husbandry and cereal cultivation, with the goal of establishing precise site chronologies. We screened legacy data and conducted radiocarbon dating on carefully selected material, and combined old and new data within Bayesian models. As a result, we were able to pinpoint these subsistence novelties with considerably greater precision and discuss the nature and pace of these events, challenging the previously proposed interpretations. Our study forms a significant contribution to the debate on the Neolithisation of northern Europe.

10 **IN IBERIA, THE TRANSITION(S), NON-LINEAR AND REGIONALLY SPECIFIC, LASTED SOME 1500 YEARS AFTER NEOLITHIC MIGRANTS FIRST ARRIVED CA. 5600 BC**

Abstract author(s): Templer, Michael (Neuchâtel University)

Abstract format: Oral

The evidence suggests that the first Neolithic migrants arrived on the Mediterranean coast of the Iberian Peninsula between 5700-5500 BC, bearing the North Italian Impressed Ware pottery. This first wave was followed by migrants bearing Cardial Ware, which originated in the South of France. These migrants, largely avoiding areas occupied by hunter-gatherers, navigated down the Mediterranean eastern seaboard of Iberia into the Atlantic and up the Atlantic coast beyond the Tagus estuary. Interaction between the migrants and the Mesolithic hunter-gatherers varied over time and space, so that the Transitions need to be viewed from the perspective of at least the 7 substantially different geographic regions of 1) The eastern Mediterranean seaboard, 2) The Alboran Sea and the Algarve, 3) The Atlantic seaboard as far as the river Tagus, 4) The western seaboard north of the Tagus, 5) The Pyrenean foothills and Ebro basin, 6) the Cantabrian coast and 7) the Central Meseta. We will rapidly review some of the factors impacting the regional contacts and Transitions bearing in mind such issues as geology and geography, climatic factors, the rise in sea-level, sedimentation, the relative paucity of open-air sites, Neolithic attributes (e.g., material attributes, life-ways, settlement patterns, belief systems and burial practices), genetic evidence, demographic factors, as well as the evidence to support resistance, acceptance, integration and the time span between the first appearance of Neolithic migrants and the incorporation of the autochthonous population into the Neolithic way of life.

11 **RECONSTRUCTING NEOLITHIC COMMUNITIES IN THE HIGH MOUNTAIN SITE OF ELS TROCS (HUESCA, IBERIAN PENINSULA) FROM POTTERY TECHNOLOGY**

Abstract author(s): Quevedo-Semperena, Izaro (Universidad de Valladolid; Sociedad de Ciencias Aranzadi) - Tejedor-Rodríguez, Cristina (Universidad de Valladolid) - Cubas, Miriam (Universidad de Alcalá; Sociedad de Ciencias Aranzadi) - García Martínez de Lagrán, Iñigo (Universidad Nacional de Educación a Distancia) - Royo Guillén, José Ignacio (Gobierno de Aragón) - Garrido Pena, Rafael (Universidad Autónoma de Madrid) - Arcusa Magallón, Héctor (Professional archaeologist) - Rojo Guerra, Manuel Ángel (Universidad de Valladolid)

Abstract format: Oral

Pottery is one of the most abundant archaeological materials found at archaeological sites and one of the most characteristic elements of the Neolithic period in South Europe. In the Iberian Peninsula, morphological and decorative analysis have so far been carried out, but it is only in recent years that studies have begun to develop a broad perspective including raw materials identification, technological choices and the use of pottery.

This paper explores an emblematic case study in Iberia focused on the pottery assemblage from Els Trocs Cave (Bisaurri, Huesca, Spanish Pyrenees) dated from ca. 5312–2913 cal BCE. Located in a mountain landscape, the site has revealed an enormous pottery collection and particular characteristics of exploitation of the environment. Pottery analysis has implemented an approach combining macroscopic and technological analyses. Technological choices have been explored through mineralogical analysis of 248 thin sections obtained from the same number of vessels. A systematic petrographic description focused on the clay matrix, mineralogical fraction and textural features is able to propose different groups of manufacture. The data suggest that the raw materials used were available in the surroundings, which allows us to propose a local technology. Different sources and ways to prepare the clay were used in the manufacturing of the vessels.

Exploring the correlation between technology and morpho-decorative features allows us to test with previous work whether or not morphological features can be used to define these groups. The aim is to explore whether there is any kind of social organization or differentiation in relation to the technology of pottery production, all within a diachronic perspective over the two millennia of use of the cave.

THE MESOLITHIC-NEOLITHIC TRANSITION IN THE SOUTHEAST OF THE CENTRAL PLATEAU OF THE IBERIAN PENINSULA: A STATE OF THE ART

Abstract author(s): Lozano-López, Néstor (Universidad Nacional de Educación a Distancia - UNED) - Cubas, Miriam (Universidad de Alcalá; Sociedad de Ciencias Aranzadi) - Mingo, Alberto (Universidad Nacional de Educación a Distancia - UNED)

Abstract format: Oral

The Southeast of the Central Plateau (Spain) is a crucial region to explore the connections between the Mediterranean coast and the inland Iberian Peninsula. Mesolithic and Early Neolithic sites on the Mediterranean coast of Iberia are well-known. However, there is little information about the last hunter-gatherers and the spread of domesticated plants and animals to the interior and its chronology. Furthermore, there has been little attention by the scientific community to the Mesolithic-Neolithic transition in the Southeast of the Central Plateau in comparison with other Prehistoric chronologies, such as the Bronze Age.

A good number of the sites known were excavated in the context of commercial archaeology or were discovered and excavated as a consequence of research projects focused on other chronologies, such as the Paleolithic. Moreover, most known Epipaleolithic, Mesolithic and Early Neolithic sites have not been excavated, so they only provide materials recovered on the surface. Radiocarbon dates of stratigraphic levels in well documented archaeological excavations regarding the Mesolithic-Neolithic transition are also extremely scarce.

In recent years the research interest on the Mesolithic-Neolithic transition in this area has increased and various projects are currently taking place, which are providing relevant information about the Neolithisation process. Although still insufficient, the growing number of sites and projects focused on this period are shedding light on various aspects of the economy, material culture, social structure, etc. of the last hunter-gatherers and the first farmers in this region. In this contribution we present a summary of the archaeological information focused on the Mesolithic-Neolithic transition in this territory.

CULTURAL INTERACTIONS IN THE 6TH MILLENNIUM BC OF SOUTH-WESTERN IBERIA

Abstract author(s): Soares, Joaquina (UNIRQ- Lisbon University; MAEDS- Museum of Archaeology and Ethnography of the District of Setúbal)

Abstract format: Oral

The archaeological record of the early Mesolithic is very fragmentary in the Portuguese Southwest Coast, which is interpreted as the outcome of a very low demographic density. The void in the archaeological map of the early Mesolithic is filled onwards the last quarter of the 7th millennium, transition to the 6th millennium cal BC. Our narrative starts from that moment, when demographic density increases and mobility adjusts to the concept of territory organized around aquatic ecosystems.

We follow the difficult decision-making process in favour of adopting or rejecting the food production economy (livestock and agriculture) and the corresponding peasant way of life. Several resilient Mesolithic communities (e. g. Vidigal) persist in their traditional way of life, selectively and sparsely adopting the novelties of Neolithic material culture (pottery and polished stone) in the last quarter of the 6th millennium, transition to the 5th millennium cal BC. Other groups in their close vicinity, as in the case of the large site of Vale Pincel I (Sines), adopted agriculture very early (second quarter to mid-6th millennium cal BC). On this Atlantic boundary, technological and economic innovations of Mediterranean origin were disseminated through regional interaction networks and locally integrated at different rhythms. In this process of hybridization by cultural osmosis, from which many links are missing, Neolithic society appears to have been built within the local Mesolithic communities.

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AUROCHS TO CATTLE: INVESTIGATING THE MESOLITHIC - NEOLITHIC TRANSITION IN THE BASQUE COUNTRY USING SEQUENTIAL CARBON, OXYGEN, AND STRONTIUM ISOTOPES

Abstract author(s): Kelly, Hector (School of History Archaeology and Religion - SHARE, Cardiff University) - Griffith, Jacob (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel) - Madgwick, Richard (School of History Archaeology and Religion - SHARE, Cardiff University) - Alcantara Fors, Roger (School of History Archaeology and Religion - SHARE, Cardiff University; Departament de Prehistòria, Universitat Autònoma de Barcelona) - Ordoño, Javier (Department of Archaeology and New Technologies, Arkikus) - Alday, Alfonso (Departamento de Geografía, Prehistoria y Arqueología, Universidad del País Vasco - UPV/EHU) - Snoeck, Christophe (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel)

Abstract format: Oral

The human-induced aseasonal reproduction cycle of cattle, which in natural conditions would usually produce calves only in the spring months, was a crucial achievement for the success of production economy, since it ultimately enabled humans to produce meat and dairy products year-round. It is theorised that the implementation of this practice played a key role in the increasingly restricted territoriality of the Mesolithic-Neolithic transition communities (ca. 5700-5300 BC) in the Basque Country. This is some centuries before sedentism became widespread with the consolidation of agriculture. As such, observing changes within the natural rhythm and/or certain patterns in the mobility of both supposedly domesticated and wild bovids of this transitional period (i.e., cattle and aurochs, respectively), could suggest human influence, and potentially the introduction of husbandry practices.

This study presents a high-resolution incremental enamel isotope analysis of 10 deciduous bovid premolars to explore the introduction of such practices in the Mesolithic-Neolithic transition of the Basque Country. The teeth, recovered at the famous transitional site of Mendandia (7500–5350 cal. BC), were analysed individually to reveal time-resolute fluctuations in carbon ($\delta^{13}\text{C}$), oxygen ($\delta^{18}\text{O}$) and strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) isotope ratios. Our results revealed an extension of the expected natural birthing seasons, providing evidence of early husbandry controls onto the bovids within the Mesolithic-Neolithic transitional period. Further, strontium profiles indicate a substantial level of animal mobility, potentially linked with short movements (e.g., transterminance) between the seasonally occupied settlements (mostly rock shelters) evidencing the restricted territorial networks characteristic of the period in the Basque Country. This demonstrates that complex and choreographed patterns of animal management were employed relatively early during the Mesolithic-Neolithic transition in this region, and shows the validity of the methodological approach used here to enhance the understanding of this particularly important process in the history of humankind.

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NATURE MAINTAINS ITS HOLD: KEEPING THE 'SHOCK OF THE NEW' AT BAY IN NW IBERIA

Abstract author(s): Higginbottom, Gail (INCIPIT - Consejo Superior de Investigaciones Científicas-CSIC)

Abstract format: Oral

This presentation reviews old and new material pertaining to the coming of new life-ways to NW Iberia, including subsistence activities. Coming 1000 years later than the full Neolithic of the south on this same peninsular, Galicia shares qualities with the neighbouring region of northern Portugal in terms of material culture, life ways and likely belief systems. Intriguingly, these both contain overlapping references to the south whilst remaining unique in their local responses, sometimes centuries later. Picking up on the presenter's earlier idea that NW dolmens become the Athēnaea of those societies still transitioning, we will see something of how the 'new' was integrated into what was already known, rather than vice versa. Most particularly, rather than seeing themselves as domesticators of a World, they still maintained that the forces of Nature contained Life's guiding principles. Thus, in this way, the 'new' was absorbed into and lived beside all previous concepts of subsistence, the wildlife modes. Through the examination of research done on palaeo-environmental records and material culture from the early to later Neolithic, this paper will demonstrate how Galician dolmens hold the key to the knowledge and understanding of past people and their world as they transition from one 'set' of life ways' to another.

INVESTIGATING LITHIC TOOLKIT SPATIAL DISTRIBUTION DURING THE JOMON-YAYOI TRANSITION IN JAPAN

Abstract author(s): Carrignon, Simon (McDonald Institute For Archaeological Research, University of Cambridge) - Shoda, Shinya (Nara National Research Institute for Cultural Properties; University of York) - Maynard, Glynnis (Department of Archaeology, University of Cambridge) - Crema, Enrico (Department of Archaeology, University of Cambridge; McDonald Institute For Archaeological Research, University of Cambridge)

Abstract format: Oral

The transition from hunting and gathering to farming in Japan was triggered by the arrival of migrants from the Korean peninsula. These migrants brought with them new cultural practices, including different lithic technologies and social structures. However, the adoption of these new customs was far from being uniform, reflecting the complex and geographically diverse forms of cultural interaction between migrant communities and incumbent hunter-gatherers. Understanding the factors behind these patterns can be challenging, as the observed differences are the result of a mix between cultural interactions, ecological adaptation, and geographical isolation. In this study, we analyse the diversity of lithic toolkits from 1381 archaeological sites throughout Japan during the Yayoi period to try to understand these patterns. We combined data collected in archaeological reports with methods from population genetics to determine if the differences in toolkit assemblages at each site can be explained by ecology, or cultural affiliation, or simply geographic distance. Evaluating the importance of such factors is challenging as traditional methods like Mantel test or cluster analysis have limitations in contexts with high spatial and temporal autocorrelation, uneven sampling, and sparse data. This paper proposes a set of new tools to address these limitations and gain a deeper understanding of the relationship between different toolkit assemblages during a time of cultural, social, and technological change.

WORKING WITH IMPERFECTION IN ARCHAEOLOGY. THEORETICAL AND PRACTICAL APPROACHES TO DATA MANAGEMENT

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Tobalina-Pulido, Leticia (Incipit - Institute of Heritage Sciences) - Castiello, Maria Elena (Institute of Archaeological Sciences - IAW, University of Bern) - Herrera Malatesta, Eduardo (Aarhus University)

Session format: Regular session

One of the most problematic issues when working with humanistic data, and specifically with archaeological data, is their imperfection. The data is ambiguous, partial, imprecise, uncertain. This imperfection, which can be intrinsic to the data themselves or be generated later with its processing, makes it difficult to produce reliable results. Speaking of imperfection quickly leads us to think of “lack of perfection”, but we are not necessarily alluding to it. Within it would encompass “uncertainty, typing error, imprecision, missing and uselessness” (Achich, 2019) but also incoherence, incompleteness and redundancy (depending on the authors) as sources of data imperfection.

In recent years, some researchers have become increasingly interested in the need to address in their research, especially those using databases, the problem of data imperfection and all the implications that this entails. Despite this, not many researchers have yet delved into this aspect in their research. The session we propose aims to bring together researchers who are or have worked on the imperfection of archaeological data in its broadest sense, from theoretical reflections to proposals for managing the imperfection or part of it (uncertainty, inaccuracy, incompleteness, etc.) in any chronological period and application, both during the collection of data in the field or its processing in the laboratory.

This session proposes an open forum to co-create knowledge on the subject of: How can we address the imperfection (any of its properties) of archaeological data? How should we manage data to obtain more honest results and how can we design best practices for establishing scientific transparency? Is it possible to propose archaeological data management standards? What are the options?

Proposals for managing the imperfection of archaeological data.

How can we represent and manage the imperfection of archaeological dating? What strategies should we use in data collection to “reduce” imperfection?

1 OPENING PANDORA'S BOX: ARCHAEOLOGICAL DATA IMPERFECTION AND THEIR MANAGEMENT, SHARING, AND REUSE

Abstract author(s): Batlle Baró, Sabina (Universitat de Barcelona)

Abstract format: Oral

The benefits of opening archaeological data are multiple and broadly described in the literature. Among them, increased transparency, collaboration and reproducibility are all factors that can potentially help identify -and even reduce- data imperfection.

However, at the same time, opening imperfect data could escalate this imperfection, and make it useless for others to reuse. In view of this situation, different questions arise: how should we document imperfection? How do we deal with imperfection when reusing archaeological data? Is imperfect data really reusable?

Using as a basis the experiences and perspectives of Catalan Archaeology researchers collected in a series of in-depth, semi-structured interviews, we will approach the issues that arise around data imperfection when managing, sharing and reusing archaeological data. We will assess the implications of open data and data imperfection and explore the possibilities that open data can bring to the management of archaeological data imperfection, while trying to evaluate the impact data sharing and reuse can have to this same imperfection.

2 BEYOND UNCERTAINTY: BEST PRACTICES FOR EXPLORING AND MODELLING UNCERTAINTIES IN REGIONAL ARCHAEOLOGICAL DATASETS

Abstract author(s): Herrera-Malatesta, Eduardo (Center for Urban Network Evolutions, Aarhus University)

Abstract format: Oral

Archaeological data is intrinsically uncertain. The material remains that archaeologists register in the field are the fragmentary result of complex past human lives. What we call data is not an empirical reality found in the field, but rather an arbitrary classification. Archaeological classifications respond to specific research questions adjusted to historical, environmental and cultural contexts. A classic example in the arbitrary history of archaeological classifications is the notion of 'site', particularly in the context of regional surveys. For decades, archaeologists have searched for categories to classify the material evidence in the field and from this several definitions have been proposed, e.g., 'sites', 'non-sites', and 'off-site'. Within regional archaeology, matters get more complex when we face the fact that the systematic total area survey (the ideal method to reduce uncertainty in regional archaeology) is not a method that can be applied to every environment. Additionally, regional archaeologists frequently integrate within their datasets, archaeological sites recorded in past small-scale and site-based projects, that also applied very different methodologies. Furthermore, when the aim of a project is to study regional patterns by applying spatial analysis, a key question arises: how can we be certain that the available pattern is a representative sample of the patterns in the past? In this presentation, I will use two databases from northcentral Venezuela and the north-western Dominican Republic to 1) exemplify the typical uncertainty types in regional archaeological data, 2) explore concrete solutions on how to reduce uncertainties and prepare the data for computational analysis, and 3) present a series of uncertainty quantification methods to assess both the databases and the spatial analysis models created from them. Overall, this paper aims at providing best practices solutions for archaeologists facing highly uncertain regional datasets and willing to apply computational methods to understand past regional patterns.

3 THE IMPERFECT DATA OF SYSTEMATIC SURFACE COLLECTIONS AND SOME POSSIBLE SOLUTIONS

Abstract author(s): Gergácz, Rebeka (Hungarian National Museum)

Abstract format: Oral

During systematic surface collection surveys, a lot of data is accumulated with the finds, that need to be processed further, in order to carry out research. At the moment, archaeologists have more and better tools for this than ever before, but due to the multiple steps of data collection and management, our data can become damaged. When analysing survey results, one has to consider potential inaccuracies and data damage, otherwise, it is easy to reach false conclusions.

When writing my master's thesis about a systematic surface collection on a multi-period prehistoric site complex (Százhalombatta – Százhalom and its vicinity in Hungary), I had to face the problem of data imperfection in many ways. Some of this came from research conditions (e.g. surface coverage, light conditions), while some were due to human error, caused by the different levels of the participants' experience, inattentiveness while taking notes on the field, and the uncertainty of dating the finds.

To get as reliable results as possible, I attempted to solve these issues - or at least minimise their impacts - in a number of ways. By preparing the fieldwork and the participating students better, and developing a new data processing method to deal with uncertainly dated finds, a huge improvement was made. In this presentation, I explore the several layers of data imperfection in the case of systematic surface collections through the example of the fieldwalkings of Százhalombatta – Százhalom and propose some possible solutions for them.

4 FACING THE STUDY OF THE SETTLEMENT PATTERNS CONSIDERING THE IMPRECISION AND UNCERTAINTY OF ARCHAEOLOGICAL DATA

Abstract author(s): Tobalina-Pulido, Leticia (Incipit - Institute of Heritage Sciences) - Medina Gordo, Sonia (Universitat de Barcelona)

Abstract format: Oral

One of the most challenging issues when we dealing with archaeological data (and humanistic data in general) is its imperfection. In other words, the archaeological data are ambiguous, partial, imprecise and uncertain. This, which may be inherent in the data itself or be generated after the data have been processed, makes it difficult to produce trustworthy and reliable results. In the last decades, the growth of data has become more evident due to the generalised use of databases. In addition to the growth of data volume, there was an increase in the variety of data, which came from a diversity of sources and the techniques used became more and more diverse. Within the diversity of the data, one of the key challenges is to know the degree of so-called „data imperfection“ (degree of inaccuracy, imprecision, incompleteness, ambiguity or vagueness). Some authors have proposed theoretical or practical approaches to deal with this problem, either with varying degrees of success. However, they are usually complex approaches to apply in day-to-day archaeological research. In this paper we firstly present the main issues of archaeological data for the study of settlement dynamics in the Iberian Peninsula, starting from the general characteristics and focusing on some cases as examples to illustrate these problems. Thus, several ways of dealing with the assessment and representation of the imprecision and uncertainty of archaeological data are proposed concerning some of its most significant variables, such as the dating or the function of settlements. The proposals will be applied to a set of test data and the strengths and disadvantages of using one or the other will be discussed. In all of them, the aim is always to make their practical application simple and accessible to all researchers, whatever their level of computer skills.

5 ARCHAEOLOGICAL DATA AND TACTICAL SIMULATION: MAKING THE MOST OF WHAT WE HAVE

Abstract author(s): Cortell-Nicolau, Alfredo - Crema, Enrico (University of Cambridge)

Abstract format: Oral

For a long time, archaeologists have assumed the problems of their data as a necessary evil they just had to deal with. The poor quality of the archaeological record has served as an excuse to justify a general lack of power in statistical analysis and inference. All this while, in addition, we build our hypotheses on data that is systematically not sufficiently assessed.

In this communication we present how tactical simulation can help us to further scrutinise and make the most of our data. Tactical simulation is a specific modelling technique which focuses on the improvement of methods and data. In general, it consists of simulating specific datasets where different hypotheses and methods can be tested (e. g. Capturing specific rates, parameters or values, understanding parametric and/or data configuration, what if experiments, etc.). Because all these operations are performed within a controlled environment, they provide the possibility of obtaining bespoke methods that can be further generalised and tested against real data.

Although the method has been used more or less frequently in Archaeology, its standard procedure does not seem to be currently generalised. How can we test different methodological proposals in contexts of data scarcity? How can we measure the power of our analysis? In this work, we will show the basic meaning of this methodology, as well as present different case examples. We will show the underuse of relevant methodological tools such as power analysis and what-if experiments and, hopefully, will propose some solutions to help archaeologists dealing with problems derived from data insufficiency.

6 DATA VERACITY AND COMPLETENESS IN SOCIAL NETWORK ANALYSIS (SNA)

Abstract author(s): Grant, Dermot (Trinity College Dublin)

Abstract format: Oral

Distribution patterns of artefacts can help identify social and commercial ties and tell us about human behaviour, including network formation. In addition, the evidence of connections between sites includes the study of ancient written sources and inscriptions. How much of this data can be considered a sufficient representative sample in creating network connections using SNA? Should we consider that the preference for, or fortunate availability of artefacts at specific sites is biased, and possibly the scholarly opinions thereon? Can this data and resulting networks be tested

or verified by other means? This presentation will consider these issues using a case study of commercial exchange in the Aegean and Eastern Mediterranean during the Archaic, Classical and Hellenistic periods. The case study constructs links between locations (nodes) from the evidence of exchange and commercial connection based on primary sources (textual and archaeological) examined, analysed and published by contemporary scholarship to determine the likelihood of a commercial connection.

7 TALES FROM TWO RIVER BANKS? SPANNING A DIGITAL DIVIDE BETWEEN DEVELOPMENT FUNDED ARCHAEOLOGICAL PRACTICE AND RESEARCH FUNDED ARCHAEOLOGICAL PRACTICE

Abstract author(s): May, Keith (HE - Historic England) - Taylor, James (University of York)

Abstract format: Oral

The Matrix project (AHRC grant AH/T002093/1) has recently examined issues arising when trying to find, access, interoperate and synthesise digital data from different archaeological projects, and especially the stratigraphic and interpretive methods used in post-excavation analysis work.

The Matrix project has identified noticeable differences in the completeness of the data that gets digitally archived from archaeological research in the UK, especially in the quantities and re-usability of data deposited as the result of commercially funded archaeological investigations as opposed to Research funded archaeological investigations (e.g. university or national agency funded).

In this 'Tale of two River Banks' there seem to be considerable differences and divergence in the archaeological processes used on either side, and therefore inconsistencies in the digital archive products. Along with common issues encountered elsewhere across Europe and globally that affect choices and adoption of standards in archaeological fieldwork, the paramount underlying issue is probably funding sources. Continued changes in methodological approaches and adoption of technology can also seriously influence or determine what data does, or does not, end up in the publication, let alone the archive.

The Matrix project has made several recommendations for improving the digital records of stratigraphic data, including better use of Data Management Plans (DMPs) and proposed establishment of an International Convention on Archaeological Stratigraphic and Chronological Methods and Data. Outcomes include a follow on R&D project to develop an "Archaeologists Guide to Good Practice – Handbook" for Stratigraphic Analysis. The aim of this new project is to draw together the collective expertise of the main contractors that undertake archaeological fieldwork as part of the development control process in the UK and, in consultation with other stakeholders from the sector, explore a consortium approach to distil, document and support best working practice and develop online resources for archaeological post-excavation analysis work.

8 ON THE TRANSFORMATION OF CELTIC COINS INTO DATA AND KNOWLEDGE

Abstract author(s): Moeller, Markus - Roesler, Katja (RGK - Romano-Germanic Commission DAI)

Abstract format: Oral

The project ClaReNet: Classification and Representations for Networks. From types and characteristics to linked open data for celtic coinages (<https://clarenet.hypotheses.org/>) explores the benefits and limitations of the digital turn in numismatics by testing new classification methods using the examples of three different Celtic coinages. Celtic coins are less standardized formally and structurally compared to other ancient coinage. Numismatics, however, analyzes them with methods developed on highly standardized coinages. Their methodology thus encounters resistance from the object itself, which has led to the existence of multiple contradictory coin classifications.

In our project ClaReNet, we study how numismatists deal with less-than-perfect coins (struck off centre, poor conservation state) and address uncertainties in their designations, descriptions, orientation and classifications. Since Celtic coins are available in large numbers, we are, on the one hand, developing automated procedures using Artificial Intelligence to help uncover and reduce uncertainties in the numismatic analysis of these numerous objects. On the other hand, we are creating a flexible database in order to display the uncertainties. Finally we will address uncertainties in knowledge production, how they shape numismatic practices and whether or whether not there are path dependencies.

9 ON BABIES AND BATHWATER: STRATEGIES FOR DEALING WITH IMPERFECT DATA IN (BIO) ARCHAEOLOGY

Abstract author(s): Kaiser, Jessica (Uppsala University)

Abstract format: Oral

The transition in archaeology from field notebooks and pro-forma sheets to spreadsheets and databases has affected not only how we store and preserve our data, but also how we disseminate and share datasets. With technologies

such as GIS and 3D modeling becoming more or less ubiquitous, archaeological projects increasingly generate large volumes of born-digital data that require new solutions for data archiving and management. This has led to the creation of digital repositories specializing in archaeological data archiving (e.g. ADS, tDAR, Open Context), and a move toward open data which is also visible at the policy level, in that many funders now require data management plans as part of the grant application. Most practitioners today subscribe - at least in theory - to the principles that research data should be Findable, Accessible, Interoperable, and Reusable (Wilkinson 2016). However, archaeological data is in itself imperfect, incomplete, and theory-laden, and not always easy to describe in a structured way so as to readily enable reuse or aggregation with other datasets even if the data are freely shared. Bioarchaeological data provide a case in point. Calls for standardized descriptions of bioarchaeological data to enable data aggregation occurred fairly early in the discipline, culminating in the publication of the Standards for Data Collection from Human Skeletal Remains in 1994 (Buikstra & Ubelaker), a resource that is widely used by bioarchaeologists worldwide. Despite the use of standard recording methods, however, re-use of bioarchaeological datasets from archaeological contexts by researchers other than the data collectors remains uncommon. Partly, this is often due to the difficulty of assessing exactly how the standard recording methods were applied, or in other words which choices were made in the process of collecting the data. This paper will discuss strategies for making such process-data more transparent in (bio) archaeological datasets.

10 FROM A PERFECT ROMAN THEATRE TO AN ILL-FATED DISCOVERY. THE MUSEUM OF LISBON - ROMAN THEATRE (PORTUGAL)

Abstract author(s): Brum, Patrícia - Grilo, Carolina - Fernandes, Lídia (Museum of Lisbon - Roman Theatre)

Abstract format: Oral

The management of the archaeological information on the Roman Theatre, since its date of discovery in 1798, is nowadays in charge of the Museum of Lisbon – Roman Theatre. Yet, there were many contributors for this sets of data and several approaches to its registry, accompanying the history of Lisbon’s urban archaeology. The effort of reading an urban site, throughout the interventions not only along the centuries and years, but also in its complex geography of overlapping new buildings and the present-day city, offers many challenges that will be addressed in this presentation.

With increasingly accessible digital online tools, the systematic approach to the data collected can be seen in a seemingly standardized way, beyond the diversity of information. But how should we deal with undocumented processes, lack of or incomplete documentation? We try to overcome the difficulties with a multi analytical approach from the mineralogical, iconographic, architectural and mathematical studies, among others. How does this cross to overcome the mentioned imperfection. Particularly with long-term interventions on the site disturbed by multiple interferences and without a defined or yet accomplished purpose. How do we fill in the blanks of the uncertainty of past and future interventions?

11 WORKING WITH PERFECTLY IMPERFECT DATA: AN AUTOETHNOGRAPHIC REFLECTION ON DATA COLLECTION, PROCESSING AND DISSEMINATION (METDECT PROJECT)

Abstract author(s): Kurisoo, Tuuli (Tallinn University)

Abstract format: Oral

In this paper, I use autoethnography to share my experiences with collecting, processing and disseminating data in the course of MetDect project*. MetDect database includes information about metal-detected artefacts from Estonia in a long temporal scale (Stone Age–Modern Period). There are many challenges that make this data even more imperfect than archaeological datasets usually are. In my talk, I will point out the main issues that influence the quality of this data, but my focus will be on mitigation strategies that I have used.

I will separately address problems that I faced during data collection phase (inherent limitations of source material) and data processing phase (digitizing data, using existing ontologies and vocabularies). Lastly, I will say a few words about research and public outreach activities that are based on MetDect dataset.

*MetDect: Metal-detected past: a study of long-term developments in settlement patterns, technology and visual culture on the example of metal-detector finds from Estonia

12 HOW TO UNRAVEL THE TANGLE. USING LEGACY DATA TO INTERPRET SOME KEY SITES IN BRONZE AGE SOUTHERN ITALY

Abstract author(s): Palazzini, Flavia - Pizzuti, Elisa - Vanzetti, Alessandro (Sapienza - Università di Roma)

Abstract format: Oral

Over the last decades, the rapid spread of technologies has enabled thorough data digitization processes. Digital conversion has frequently resulted in standardization procedures and data consolidation. Anyway, information stored in non-machine-readable formats is still prevalent in archaeology, and particularly for legacy data: the term “imperfection” appears to be quite appropriate when referring to it. This paper will address the problems of working with data from past excavations, seen as a promising but challenging field, full of imperfections and information losses (e.g. labels corrupted by time, hard-to-read handwriting, details scarcity and data leakage). The analysis builds on some Bronze Age case studies in Southern Italy (such as Torre Castelluccia and Porto Perone near Taranto, Apulia, Italy). Archaeological research in this area was particularly intense between the early 1900s and the 1960s, but many sites remain unpublished or only partially known. Excavation data from these contexts require an in-depth reexamination to gain a more comprehensive perspective on their occupation history and network relations. A significant step in information retrieval is the transition from a physical to a digital archive (here: MS Access database) to counter the risk of further damage and loss. This research aimed to answer some of the following questions: when does the maximum data loss occur? How much is gone, beyond the possibility of repair? How could we ascertain and fix the damage and formulate interpretive hypotheses? In fact, first-hand experience reveals that information is often lost not only throughout the excavation and documentation processes but also during the conservation stage (e.g. in archives, storages, and museum collections). We hope that our experience can be translated into a qualitative and possibly quantitative model for evaluating the loss of similar legacy data.

13 LIMITS, INCOMPLETENESS, AND POTENTIALITIES OF PREHISTORIC SICILY, BETWEEN ARCHAEOLOGICAL DATA, BIG DATA, OPEN DATA, AND DIGITALISATION: A CRITICAL REAPPRAISAL

Abstract author(s): Giannitrapani, Enrico (Arkeos - Servizi integrati per i beni culturali s.c.; Confederazione Italiana Archeologi)

Abstract format: Oral

Data are the basis on which archaeological praxis is built. Since its beginning as an academic discipline, archaeology has transformed its scope from recovering and archiving ancient objects to recovering and archiving information on those same objects. We moved from the object’s recovery to the self-explanatory meaning of material culture (i.e., the presence of polished lithics and pottery was sufficient to define a Neolithic context) to its use to infer Middle Range theories, up to contextual and phenomenological interpretations of archaeological evidence. We moved from archiving data (objects) in museum cages to paper media to the digital revolution. The challenge is to transform archaeological data into Big Data, intended as a complex system covering the entire workflow (acquisition, storage, signalling, dissemination, archiving, selection, and processing) using the ever-increasing storage and elaboration capabilities of computers within an open and co-shared environment. Data processing and analysis in archaeology is bounded and limited by a still prevailing proprietary conception of data and their quantitative and qualitative incompleteness. The case study of prehistoric Sicily is therefore presented. Here, all the problems mentioned above are still prevailing: the use of a classificatory approach to the data, the limited use of stratigraphic methods and scientific analyses, the low-level degree of digitalisation, the lack of open data are crucial issues that need to be addressed if we want to propose a more effective and innovative narrative of prehistoric Sicily. The quantitative and qualitative incompleteness of archaeological data are discussed through some specific examples (Neolithisation and consolidation of Neolithic lifeways, adoption of metallurgy). Finally, the results of the Calib_Sicily project, with the acquisition, statistical elaboration, and open dissemination of all radiocarbon/AMS dates available for prehistoric Sicily, are presented, including the evaluation of the data list incompleteness, as well as the quality control procedures applied to its validation.

14 THE IMPORTANCE OF IMPERFECT ARCHAEOLOGICAL AND GEOSPATIAL DATA AT THE THEBAN NECROPOLIS (LUXOR, EGYPT)

Abstract author(s): Jiménez-Higueras, Ángeles (University of Granada)

Abstract format: Oral

The aim of this contribution is to show how the study of the sacred landscape of the Theban necropolis during the New Kingdom is based on imperfect data. The partial nature of these data is due to different reasons: the area remains unexcavated in its entirety; each archaeological mission uses its different georeferenced system, its own topography and cartography because of the lack of geodesic points in the Theban necropolis, etc. In consequence, some results of

the studies of the territorial distribution based on GIS tools are uncertain or incomplete. This is an obstacle that must be dealt with, especially in a discipline so reluctant to adopt new technologies as Egyptology.

With these premises in mind, this talk intends to address the problem of working with imperfect data. However, if these data are managed properly, they can be useful in the reconstruction of the ancient Egyptian landscape. The adoption of new theories (such as an approach from the Landscape Archaeology) and of new methodologies (based in digital technologies such as the use of Geographical Information Systems -GIS-) is helping to reduce imperfection and to improve the management of archaeological and geospatial data. There is an urgent need to create a topographical unified and consistent UTM coordinate system that would be used by all the missions working in the Theban necropolis. All the missions need to speak the same language in order to understand each other's data, and this will only be possible if a unified system is created.

15 **UNCERTAINTY IN ANCIENT EGYPTIAN AND SYRO-MESOPOTAMIAN SETTLEMENTS. CAN AORISTIC ANALYSIS HELP?**

Abstract author(s): Gómez Senovilla, Silvia (University of Vienna)

Abstract format: Oral

When dealing with the study of ancient settlements, it is frequent that methods such as GIS are used to show a particular outcome. However, when used merely as a visualization or locational tool, spatial software may fall short of providing adequate results if the researcher is dealing with spatio-temporal gaps in the archaeological record. The result ends up being a presentation of architectural production -buildings-, located at one particular point in time and space but falls short of providing an account of the processes and changes happening in and between those settlements. Just as timelines are artificially presented in a straight line, where change is marked by (known) events as if there were no transitional stages in between, settlements and houses are treated as static entities, and the presence of gaps is minimized when datation terminology such as "Middle Bronze Age" is used. An analysis of occupational dynamics in ancient settlements is challenging when occupancy is only presumed.

Due to the intrinsically incomplete nature of the archaeological record, how can we adequately frame gaps and uncertainty in settlement archaeology? In this contribution, I aim to present how I approach the treatment of the uncertainty and inconsistency of my data with the introduction of statistical methods, particularly aoristic analysis, while trying to open the discussion to what type of data may be suitable -or not- for such analysis.

16 **TO BE, OR NOT TO BE? GOING BEYOND TWO-VALUED LOGIC FOR AN EARLY MEDIEVAL LANDSCAPE CHARACTERISATION**

Abstract author(s): Medina Gordo, Sonia (Universitat de Barcelona)

Abstract format: Oral

Uncertainty is ubiquitous in many aspects of archaeological practice, and the achievement of unequivocal knowledge about an object or situation seems difficult in our discipline. We archaeologists are continually confronted with data that are incomplete or missing for our purposes, so there is always room for imperfection in knowledge-making process. In historical landscape studies, the situation is relevant because we consider many imprecise variables such as chronology, the geography of a territory or the functional attribution to certain spaces in order to characterise a landscape. From an archaeological approach, this characterisation is usually studied by analysing different remains together both chronologically and spatially. By doing so, we may infer the typological definition of an archaeological site, its formal similarity to other archaeological sites, or whether these categorisations may suggest that they are all part of the same process; even if only in probabilistic terms. The problem arises when there is no evidence of self-reflection in our datasets and we end up presenting complex observations as true/false statements.

Data imperfection thus becomes an issue that cannot be avoided in HSS research, both theoretical and applied. In this contribution, I will consider a possible multi-valued logic approach, the so-called fuzzy logic, and apply it to specific problems of landscape characterisation with sources of diverse nature. I will focus on the particular case of early medieval mountain areas, examining (1) the different ways in which studies have processed the landscape traces to present the historical complexity; (2) how these approaches have ended up establishing an Aristotelian image of the configuration of medieval territories as something that is, or is not, of a certain shape and (3) what aspects of the process of data management we as humanists can improve to interrogate this past taking an introspective perspective of the information.

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Goldstein, Avner (Boston College) - March, Eleanor (University of Exeter)

Session format: Regular session

Papers in this session explore the material culture of lived religion on the edge of the European Atlantic, from the Iron Age through the end of the Middle Ages. Following the successful EAA 2022 session “The Materiality of Lived Religion Under and After Rome,” we wish to continue discussions exploring the opportunities and interpretative challenges of using material culture for understanding ritual and religion. This year, particular attention is given to the materials, practices, performances, and experiences of religion in regions that lie along the European Atlantic, including Ireland, Great Britain, the North Sea, France, and Iberia. As well as introducing listeners to the particular materials of religion that are the focus of the paper, presenters should also address at least one of the following issues: the impact that Atlantic environments and landscapes had on ritual practices and understandings, or how lived religion’s material expressions were impacted depending on whether they were found at the centre or on the margins of empires, kingdoms, territories, communities, or societies. This session provides a space for serious discussion between practitioners working in different time periods, places, and disciplines about how to think about and use material evidence to reconstruct the lived experience of religion along the Atlantic’s edge.

ABSTRACTS

1 THE MATERIALITY AND MEMORY OF THE PAST IN IRON AGE ORKNEY

Abstract author(s): Clements, Sheridan (Cardiff University)

Abstract format: Oral

The brochs of the Iron Age are perhaps some of the most iconic surviving archaeological sites of the Northern Atlantic, a source of interest for archaeologists and the public alike. Just as the landscape today is filled with the traces and remains of the past, however, some structures of the Neolithic and Bronze Age were likely visible within the Iron Age landscape. Encountering these remnants would have been part of the everyday lived experience of Iron Age Orcadians, who would have had their own interpretations and understandings of these, stored and shared within their collective memories.

Based on the preliminary results of PhD research, this paper examines the possible religious significance of Neolithic and Bronze Age ruins to the Iron Age peoples of Orkney. Many of these earlier monuments and settlements saw significant levels of activity during the Iron Age, especially the construction of brochs or broch-like structures. Possible Iron Age understandings of these features are gleaned through recontextualizing and situating these reuse practices within other materially visible memory practices such as the treatment of human remains and placed depositions, as well as their socio-economic contexts, such as the perceived insularity or conservatism of the region, and environmental and agricultural change.

In this way, the reuse of earlier settlement sites and monuments could be interpreted as attempts to connect to supernatural spirits or ancestors tied to place or land, and therefore part of a longer-term continuity of practice and connection between people and place within the Iron Age of Orkney.

2 BRIDGES AS SPACES OF RELIGION IN ROMAN BRITAIN

Abstract author(s): Goldstein, Avner (Boston College)

Abstract format: Oral

People living in Britain during the Roman period lived and made religion in all kinds of spaces, not just in just formal temples. One kind place we see rituals regularly enacted across Britain are on bridges, from which people casted votive objects into water, set up altars, and/or offered sacrifices. The ritual deposition of objects in riverine settings was popular in Britain as well as other places in northwest Europe (Kessel and Nijmegen), both during and well before Rome’s presence. Bridges, too, were highly symbolic and political gestures that were used during Rome’s military expansion in Britain, and bridges played a large part in religious practice at Rome. This paper explores bridges in Roman Britain as specifically religious spaces, ones where different kinds of people felt empowered and called to connect ritually with the waters they meant to cross. It traces ritual deposition on bridges across the whole of the Roman period across Britain, occasionally comparing these practices with contemporary ones we see at Rome, as well as earlier Iron Age practices. The evidence raises important questions for the materiality of bridges and the rituals that were enacted there, and whether we can speak of a specific provincial British way of thinking about an otherwise widespread and longstanding practice.

3 BURYING BEAKERS AT THE EDGE OF THE WORLD: THE CONTINUATION OF A MATERIAL MORTUARY PRACTICE IN BRITAIN AFTER ROME'S FALL

Abstract author(s): Fleming, Robin (Boston College)

Abstract format: Oral

In Britain, both under and after Rome, people sometimes placed small, footed vessels next to the heads of the dead. This paper characterizes and traces this burial practice from the time when Britain sat within the Roman Empire to the period after it had fallen outside of it. Its point is to 1) provide a corpus of material that allows us to see the ways the materiality of some ritual practices continued, despite Britain's transition from a Roman province to a place at the edge of the world, 2) to see how this transition changed the way people made or acquired this material of religion, and 3) how, despite Britain's move from center to periphery, the basic look and ritual function of these vessels stayed the same. Although Britain was no longer part of the Empire, these vessels hint that some households in Britain continued to deploy objects in their ritual practices that evoked the globalizing material culture that members of provincial societies across the Roman world had used for centuries.

4 RELIGION, RITUAL AND WHITE QUARTZ: THE PHENOMENON OF PEBBLE BURIAL IN THE EARLY MEDIEVAL IRISH SEA ZONE

Abstract author(s): Shiner, Marion (Dyfed Archaeological Trust) - Hemer, Katie (UCL Institute of Archaeology)

Abstract format: Oral

During the early medieval period, deliberate inclusion of white quartz pebbles within the grave was a funerary rite afforded to some of the deceased by communities living around the Irish Sea. Frequently, cemeteries containing pebble graves were located in close vicinity to the sea, with quartz outcropping as a feature of the surrounding landscape. Scholarly interpretations of this funerary practice frequently link it with a chapter in the Book of Revelation, and some authors also note the possibility of syncretism with pre-Christian belief. This paper presents the results of research into the funerary treatment of children in Ireland and Wales between the first and the ninth centuries AD. The study found evidence to support the hypothesis that the inclusion of white quartz pebbles in early medieval graves represents the material expression of syncretic religious belief. Moreover, the evidence suggests that belief in the agency of white quartz may have found particular expression during periods of intense social stress.

5 „THE WAY OF THE BIRDS“. AN OSTEOARCHAEOLOGICAL ANALYSIS OF BIRDS IN THE ÅLANDIC BURIAL TRADITION DURING LATE IRON AGE

Abstract author(s): Frid, Marcus (Stockholm University)

Abstract format: Oral

An analysis of cremation burials at two Late Iron Age burial fields in the Åland archipelago was performed to deepen the knowledge about how birds were used in the Ålandic burial tradition during the Iron Age. The island group is situated in the Baltic Sea between Finland and Sweden where burial customs in general differed and where, it seems, the choice of the species of birds were different compared to the mainland. The results of the study show that waterfowl, especially goosander (*Mergus merganser*), redbreasted merganser (*Merganser serrator*) and eider (*Somateria mollissima*) were the main species of choice in the burial ritual on Åland. This is a clear distinction from the Swedish mainland where hens, roosters, waterfowl such as geese are the most common, with birds of prey in specific burials. The material has more in common with Finland where the waterfowl had an important role. The recurring species of birds on different burial fields are rather similar, perhaps reflecting a shared symbolic worldview as expressed in the burial rituals on the Islands. The primary literary sources which touch upon old Norse religion indicate that the hen or rooster had the function of rebirth and awakening the dead in the afterlife. In the Finno-Ugric mythology the seafowl was seen as being part of the world's creation as well as having the ability to travel between the, the dead and the Gods. In many ways, the waterfowl on Åland might have taken on a role similar to the one that the domestic hen had on the mainland. The inclusion of waterfowl may have been a reasonable substitute for the domestic hen in the burial ritual as in Sweden. This might be a regional expression of a population with cultural heritage from both the Finnish mainland and the Swedish mainland.

6 THE WESTMINSTER OF THE WEST: THE MATERIALITY OF LIVED RELIGION WITHIN THE MONASTIC CHURCH OF TEWKESBURY (GLOUCESTERSHIRE, ENGLAND)

Abstract author(s): March, Eleanor (University of Exeter)

Abstract format: Oral

Tewkesbury Abbey was one of the foremost Benedictine institutions in the west of England, if not the country during the medieval period. At the time of Henry VIII's dissolution of the monasteries in the second quarter of the sixteenth

century, it was one of only twenty-four houses recorded with an annual income of over £1000. To date, the perceived lack of archival sources has concentrated research upon the surviving fabric of the church which, in line with traditional approaches to monastic and church archaeology, has focused upon disentangling the main phases of its architectural development.

A paper presented in this session at EAA 2022, showcased the potential that a truly interdisciplinary, multifaceted approach had for repopulating the complex network of religious belief, practice and performance at Tewkesbury with people, texts, architecture and material culture. This year, particular attention is given to Tewkesbury's position in the west of England, on the border with Wales, the periphery of the English Kingdom. Arguably, this geographical position became a defining feature of the site, facilitating its development and ensuring its success and wealth. Through a short series of case studies, looking in particular at patronal commemoration and popular devotion, it is argued that despite its situation on the edge, Tewkesbury was an important religious centre. Not only was it a seat of secular power but it was also a venue for the performance of Christian rituals and displays of personal piety closely entwined with material culture. It developed as the Westminster of the west, showcasing elaborate and influential examples of religious architecture, and keeping abreast of devotional trends in royal, ecclesiastical and lay circles.

111 MIRRORING WORLDS: RURAL DOMESTIC SPACES THROUGH MULTIDISCIPLINARITY IN LATE ANTIQUITY AND THE EARLY MIDDLE AGES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Olivé-Busom, Júlia (Autonomous University of Barcelona) - Berrica, Silvia (Universidad de Alcalá) - Herran, Mikel (Leicester University)

Session format: Regular session

Across many regions, the materiality of rural settlements, specially of their domestic context, tends to be poorly studied and represented. Furthermore, between Late Antiquity and the Early Middle Ages (4th to 12th centuries), the countryside greatly transformed: changing settlement patterns, trading routes and connections all contributed to the emergence of new modes of living.

This session aims to connect the domestic spaces of rural settlements dated from these periods with other rural contexts, such as cemeteries or production areas, that were also part of the living and organisation dynamics of the communities that inhabited them. Particularly, we want to focus on approaches that study faunal, environmental, spatial or bioarchaeological data arising from funerary contexts, husbandry and crop dynamics, and/or production centres and domestic spaces, and that are oriented at gaining more knowledge on the associated rural settlements and/or integrating pre-existing knowledge. Additionally, this session is aimed at new findings that result from systematic excavations in a broader context of Landscape Archaeology and that are providing accurate and promising information, with the use of new technologies (geomagnetic, spectrometers, Lidar, drones, etc.) and archaeometric analyses. Communications that dwell on Human-Animal or Human-Plant interactions, trade and exchange, populational dynamics (such as domestic and artisanal spaces related to materiality), paleoenvironment, landscape archaeology, and/or living conditions and that connect these ideas with the rural domestic settlement they represent are welcome.

ABSTRACTS

1 THE TRANSFORMATION OF SPACE: BETWEEN DOMESTIC AND WORKSHOP (VII-IX CENTURIES)

Abstract author(s): Berrica, Silvia (University of Alcalá)

Abstract format: Oral

Workshops and ovens found in various excavations play a crucial role in establishing the early medieval economy. I positioned the area of the Sierra de Guadarrama as an important territory to determine the rural dynamics in the work of iron in the centre of the Iberian Peninsula between the Visigothic period and the Emiral period. In fact, the research that is being carried out in the mountainous area to the north of Madrid is essential to understand mining exploitation, metallurgical manufacturing, and the successive distribution of products -ingots and utensils-. One of the most decisive issues is learning to distinguish between primary and secondary centres and detailing the medieval ovens, difficult to find in bibliographic resources. The ceramic workshops found also help to establish the distribution and production of ceramics within the site and in the mountain towns. For this reason, I proposed an analysis of the productive and commercial system of resources in the central region to make known the material remains of artisan work and to determine its economic and social aspects. Of the Iberian Peninsula, through the typologies of the workshops found in the excavation of the Dehesa de Navalvillar (Colmenar Viejo, Madrid). Through a detailed analysis of

the two artisanal areas and the archaeological materiality, I will present unpublished data to explain the early medieval production and economy in the Central Plateau during the Early Middle Ages.

2 **CASTRO DE GUIFÕES (NORTHWEST OF PORTUGAL): A SETTLEMENT AT THE CROSSROADS BETWEEN THE RURAL WORLD AND ATLANTIC COMMERCIAL CIRCUITS**

Abstract author(s): Arezes, Andreia (Faculty of Arts and Humanities - University of Porto; CITCEM) - Magalhães, Catarina (FCT; CITCEM)

Abstract format: Oral

The Castro de Guifões is a settlement that benefits from a strategic spatial location. It is probably one of the key aspects of its broad diachronic occupation between the Protohistory and the Early Middle Ages. The Castro was built overlooking the estuary area of River Leça and, since the pre-Roman period, played an essential role as an anchorage point articulated with the Atlantic trade routes and on redistribution activities. In effect, artifact recovery at the site is extensive and attests to the connections established with various geographies. As the Roman conquest consolidated from the 1st century BC, along with local pottery, new types of containers became progressively more representative. Among them are the Roman amphorae, especially those from the Guadalquivir valley.

Throughout Late Antiquity, new occupation strategies were implemented, and the settlement, although transformed, continued to show signs of vitality. In some cases, previous constructions were reused; but new structures were also created. Regarding the artefactual component, it should be noted that together with domestic pottery and locally made dolia, other types of materials were present at the Castro. Some of them were imported: as an engraved fragments of glass from the Rhineland or refined African Red Slip, demonstrating that the site maintained an active flow of exchanges that went beyond the territory of the Iberian Peninsula. In parallel, recent archaeobotanical studies have shed light on the paleoenvironment and the use of resources at the Castro during Late Antiquity. The introduction of new species has been identified, along with the maintenance of consumption of others that had long been part of the landscape of the Northwest.

This presentation aims to present the data collected in the scope of the Research Project in Archaeology focused on Guifões since 2016 and discuss perspectives for future studies.

3 **AN EARLY ISLAMIC SETTLEMENT IN THE MOUNTAINS OF CADIZ. A NEW COMMON MODEL FOR USING THE COUNTRYSIDE?**

Abstract author(s): Mateos-Orozco, Ana (University of Seville) - Gutiérrez López, José María (Museo Histórico Municipal de Villamartín)

Abstract format: Oral

Exploiting the countryside was one of the economic bases during the Middle Ages. In Iberia, after the Muslim Conquest, different changes in society took part. Constant migration and effective Islamization resulted in a new system for occupying, profiting and thus, transforming the landscape.

In this presentation, we will discuss and compare the archaeological remains of an early Islamic settlement in the mountains of Cadiz, the archaeological site of Torrevieja (Villamartín, Cádiz). We focus our research on pottery, analysing typologies and technology, with the main goal to contrast them with the pottery record identified both in similar rural settlements and in the urban sphere. We will add the analysis of fauna that were already made, to give a complete picture of the settlement and its possible relation with farming and livestock.

Finally, we will compare the settlement and its record with analogue and similar archaeological sites nearby. The aim is to propose a new model of occupation in the area, probably common and characteristic for early Islamic new communities that settled down in the countryside and, presumably similar to the one suggested for other regions of the Islamic world.

4 **COPPER PRODUCTION AND OASIS DEVELOPMENT IN THE MEDIEVAL MOROCCAN SAHARA**

Abstract author(s): Lazarescu, Raluca - Ioana - Fenwick, Corisande (University College London) - Bokbot, Youssef (Institut national des Sciences de l'Archéologie et du Patrimoine) - Charlton, Michael - Fitton, Thomas (University College London) - Mattingly, David - Sterry, Martin (University of Leicester)

Abstract format: Oral

Morocco was a major copper exporter in the middle ages and brass ingots were reportedly traded from Saharan Morocco to West Africa in exchange for gold. However, little is known about the development or organisation of the medieval copper industry or the relationship between copper metallurgy and the sedentarisation of the NW Sahara. This paper presents new data on copper production in the medieval Moroccan Sahara from the EVERYDAYISLAM and OASCIV projects and argues that locally sourced copper was exploited as an adjunct to oasis agriculture.

The OASCIV project in the Wadi Draa of Morocco, an important secondary route for Saharan trade, has established a new chronology for oasis development in the north-west Sahara. It is now clear that settlement and oasis agriculture commenced in the Draa between the 4th–8th centuries—well before the Muslim conquest of Morocco—and increased significantly from the 9th century with a peak in the 11th–13th centuries, contemporary with Almoravid and Almohad rule of the Draa. This paper integrates the settlement data with the results of archaeometric analyses by SEM-EDS, LA-ICP-MS and lead isotope analysis. The results suggest small-scale extraction of copper from local sources, and copper production, with smelting in bowl furnaces from the 4th century. Evidence of copper metallurgy is found at many Iron Age and Medieval sites, suggesting that copper was worked at the domestic scale to make everyday objects and ornaments. While recent analyses from al-Andalus suggest a dominance of brass in the middle ages, alloy data indicates that the majority of objects (97%) in the Wadi Draa are pure copper and only a minority are brass. This paper highlights the technological dimension of the Moroccan rural landscape between the 4th–13th centuries, offering new perspectives into oasis society and exploring how changing metallurgical traditions contributed to new modes of living.

5 CONSTRUCTING EARLY MEDIEVAL PEASANT LANDSCAPES. A MULTISCALE APPROACH TO DOMESTIC SPACES, FUNERARY AREAS, AND PRODUCTIONS SYSTEMS IN WESTERN IBERIA

Abstract author(s): Prata, Sara - Cuesta-Gómez, Fabián (IEM - NOVA FCSH)

Abstract format: Oral

The post-Roman centuries lead to deep changes for communities in the countryside. The past ten years of research on Portuguese inland territories has offered new insights into this previously elusive period. While we will be using a comparative regional approach, this paper focuses mainly on archaeological data gathered from the territory of Alto Alentejo (Central Portugal). Our findings combine evidence from different research methods and scales of assessment. These include field-surveys, spatial analysis, excavations, material culture, and radiocarbon dating, along with a critical review of legacy-data from previous works in the region.

It seems clear that in Alto Alentejo, while most villa estates show evidence of abandonment and reuse, new smaller farmsteads are built in the surrounding areas. The new rural settlements materialize a distinct form to interact with the landscape: there is a clear shift in the scale and range of agricultural practices, the management of natural resources, and the relationships established amongst farmsteads. Evidence gathered so far includes settlements composed of domestic buildings, press facilities for olive oil and wine and small family managed gravesites (5th–8th c.).

This is a fertile ground to explore the complexities of daily life and social dynamics in early medieval communities. Looking into individual settlements in their context allows us to explore the social construction of reality and detect patterns for broader socio-economical practices. This paper will explore these issues while also considering the life cycle of individual households and the endurance of rural settlement patterns.

6 ELUSIVE BUT NOT FORGOTTEN. THE RURAL MOZARAB COMMUNITY OF SANTA COLOMA D'ÀGER (8TH TO 11TH CENTURIES, NE SPAIN)

Abstract author(s): Olivé-Busom, Júlia (Universitat Autònoma de Barcelona; Group EcoPast - GI-1553, Universidade de Santiago de Compostela) - Brufal, Jesús (Universitat Autònoma de Barcelona) - López-Costas, Olalla (Group EcoPast - GI-1553, Universidade de Santiago de Compostela; Archaeological Research Laboratory, Stockholm University; Laboratorio de Antropología Física, Facultad de Medicina, Universidad de Granada)

Abstract format: Oral

The Christian necropolis of Santa Coloma d'Àger is located in north-eastern Iberia, in an area known as the valley of Àger. It was in use from the 5th until the 11th centuries CE. People were interred there during the Islamic conquest of the Iberian Peninsula (8th to 11th centuries). Later on, and despite of being a Christian population, they lived through the Al-Andalus period, presumably under Islamic rule.

Although the necropolis has been excavated and is currently being researched by a multidisciplinary team, the rural settlements in which the population interred there lived are sparsely known. Moreover, there are no written sources that allude to the inhabitants of the valley of Àger during the Al-Andalus period. As a result, the bioarchaeological study of the skeletons of the necropolis can provide crucial information on how this population lived and organised its everyday life.

In this communication, we present the information on this population we obtained through the anthropological, palaeopathological, and isotopic study of the skeletons. The pathological markers of the skeletons are compatible with those more commonly found in archaeological populations, especially those mediaeval populations based on a rural economy. In addition, our isotopic results show that their diet was mainly based on C3 plants, such as wheat and most of the cereals and vegetables available in the region, a trend that is common in most mediaeval Iberian populations. It is also consistent with the archaeobotanical record and textual sources of the region. However, this population dis-

plays $\delta^{15}\text{N}$ values that suggest a lower access and consumption of animal protein (meat, eggs, dairies) than some of the surrounding populations. We explore the implications that these data have for our current understanding of the Islamic conquest and way of life in Al-Andalus.

7 'WIND OF CHANGE'. FUNERARY LANDSCAPE TRANSFORMATIONS IN THE NW IBERIAN PENINSULA (5TH-8TH CENTURIES AD)

Abstract author(s): Blanco Torrejón, Laura (University of Santiago de Compostela; Newcastle University)

Abstract format: Oral

The north-western part of the Iberian Peninsula comprises an important number of funerary remains that have been ignored by scholars as a way to understand the evolution and transformations of the society during the Early Middle Ages. Funerary areas are not only the representation of funerary and ritual practices, but also a connection point between the community and its landscape. On this paper, the simultaneous use of Archaeology of Death and Landscape Archaeology aims to understand the development and interactions between cemeteries, communities and landscape. During the 5th-8th centuries, the arrival and spread of Christianity in Western Europe was considered a turning point in funeral practices and burial customs. The Christian-like burial is traditionally characterised by a regular W-E orientation, absence of grave goods, and funeral structures that are restricted to pits and stone-cists sarcophagus. However, new data provided by recent excavations as well as the development of new studies around the topic have shown a very different dynamic in the north-western part of the Iberian Peninsula. Drawing on this new approach, nearly 400 funeral sites have been analysed based on a diachronic evolution of the funerary trend (not only the burial morphology and grave goods' variations, but also the configuration of the funerary space as a place of power -Härke, 2001-). During these centuries, funerary areas suffer alterations in their distribution patterns as well as in their interaction with the surrounding environment. Thus, it creates a different funeral landscape from the one observed during the Roman Empire and which will become a direct expression of the Christianisation of these spaces.

8 A CLEARANCE CAIRN FIELD AT FARSTORP, SWEDEN. CULTIVATION, GRAZING, BURIALS, RITUALS AND LAND RIGHTS

Abstract author(s): Petersson, Maria (Arkeologerna, SHM)

Abstract format: Oral

Around 200 – 550 AD a multi-faceted landscape of clearance cairns was created and in use at Farstorp, in the highland area of southern Sweden. Manured fields with a limited time of use (ca. 25 years has been suggested) were circulated within a large area. Reuse of stone-cleared areas was part of the strategy. Over time cattle grazing was the main trait in the area. Among the clearance cairns were scattered graves, built of clearance stones. Some contained burnt human remains, others were empty. Some of the clearance cairns were well built and grave-like. These sometimes contained burial-like features, but no human remains. The building material was clearance stones from surrounding arable land, sometimes with a surface layer of fire-cracked stones. Inside and adjacent to these, burnt animal bones, intact pots, single beads, a tweezer etc had been deposited. This find material has parallels in small ritual places of limited local importance.

Fire-cracked stones and burnt animal bones are interpreted as waste from ritual meals, consumed during spring and autumn farm work. Depositions of grinding stones support the assumption that fertility of the land was an important ritual theme. Participants of these meals might be members of the household that held the land rights.

A few human bones were deposited in each grave (but one), possibly from deceased members of the owner family who might be expected to act in favour of their living descendants, to enhance fertility in general. Such deposits may also have demonstrated and consolidated land rights.

9 APPARENTLY EQUAL: A SOCIAL ANALYSIS OF RURAL DOMESTIC ARCHITECTURE IN EARLY MEDIEVAL CENTRAL IBERIA (7TH -10TH CENTURIES)

Abstract author(s): López García, Juan Pablo (Universidad Autónoma de Madrid; Terra Levis-MASAV) - Tejerizo García, Carlos (Università di Genova)

Abstract format: Oral

The analysis of domestic architecture in the early medieval central and northern Iberia rural world has had a very late emergence due to the lack of archaeological excavations. Until the turn of the century, there was not enough evidence to build an archaeology of domestic architecture and less to carry out deep analyses regarding economic, social or political issues.

However, in the last two decades hundreds of excavations in early medieval rural contexts were carried out, which fostered the appearance of the first typologies of early medieval rural architectures and also the first social and critical

approaches to early medieval societies through household archaeology. One of the ideas that emerged from these studies is that, far from traditional approaches which considered these societies as simple, their architecture was much more complex than expected. Moreover, the deep analysis from a territorial basis came to the realization of the existence of regional traditions framed by different social and economic factors and also the presence of subtle social inequalities at the level of local communities. In this paper we will present the first results of an ongoing project aimed at investigating early medieval landscapes in the Sierra de Ávila, located in the central part of the Iberian peninsula. In this paper, we will not only deeply characterize the domestic architecture of different early medieval sites, considering the existence of a territorial building tradition, but also to describe the social structuring and economies behind the constitution of rural household economies.

10 **PESTY ENTANGLEMENTS: LIVING WITH ECTOPARASITES IN THE EARLY MEDIEVAL ATLANTIC ARCHIPELAGO**

Abstract author(s): Brody, Rachel (Boston College)

Abstract format: Oral

This paper investigates ways to interpret evidence of ectoparasites from early medieval rural settlement sites in Ireland and Britain and asks what are the implications of these domestically centered entanglements. The invertebrates under discussion include scavengers of host skin—the human flea (*Pulex irritans*) and louse (*Pediculus humanus*), the bed bug (*Cimex lectularius*), and non-biting flies (*Musca domestica*)—which, besides being uncomfortable and unpleasant annoyances, were also agents for the transmission of parasitic infections to humans and other animals. Furthermore, evidence for the presence of these ectoparasites in domestic spaces is not limited to paleoentomological data but also small finds such as fine-toothed combs, which early medieval people created and used as a response to the unpleasant nature of playing host to buggy pests. Together these different modes of material evidence give alternative insights into the lived domestic experiences of rural early medieval people; they can allow us to make inferences on health, sanitation, and disease.

11 **A VALID BENCHMARK? COMPARING THE ARTEFACT ASSEMBLAGES OF DEER PARK FARMS, CO. ANTRIM AND DRUMCLAY CRANNOG, CO. FERMANAGH**

Abstract author(s): McDowell, Jacqueline (Historic Environment Division Department for Communities) - Boyd, Rebecca (Irish Archaeological Consultancy)

Abstract format: Oral

Deer Park Farms (DPF), an enclosed farmstead site excavated from 1984 to 1987, and Drumclay Crannog, excavated in 2012/13, are two of Ireland's most remarkable early medieval rural sites. Both featured rich material cultural assemblages comprising thousands of artefacts as a result of unexpected waterlogged preservation conditions. With similar cultural assemblages and overlapping chronologies from the 7th to 14th centuries, DPF and Drumclay are benchmarks of the quality and quantities of artefacts which rarely survive in more typical dryland conditions.

At DPF, McDowell undertook an in-depth analysis of artefact deposition and taphonomic processes of c.3800 artefacts (McDowell, 2004). This established a benchmark for understanding patterns of distributions at an early medieval Irish farmstead integrating analyses of both built domestic spaces and external farmyard areas. These patterns threw particular light on the taphonomic processes by which they were incorporated into the archaeological record. There were clear distinctions between objects found in 'as used' situations, e.g. craft debris indicating workspaces, and those found in 'end-situations' such as abandonment or destruction contexts. In turn, these patterns informed the detailed interpretation of living conditions and human-environment interactions at DPF (Lynn & McDowell, 2011).

At Drumclay, 3-D coordinates for over 3000 organic and inorganic artefacts were recorded. The ongoing post-excitation programme, by IAC Archaeology, funded by HED, provides the perfect opportunity to contrast the materiality of DPF, a dryland farmstead, with Drumclay, a wetland crannog. The spatial data, combined with Drumclay's extensive architectural record, allows us to re-visit the deposition processes and question if DPF's 'as used' and 'end-situation' conclusions are repeated or varied at Drumclay. Using this comparative spatial data, we can project outwards from these benchmark sites to consider how their 'embarrassment of riches' of a very visible materiality contrasts with the 'impoverished material culture' of Ireland's dryland early medieval rural settlements.

A. **FARMING AND RESILIENCE ON THE LATE ANTIQUE HILLTOP SITE ZIDANI GABER**

Abstract author(s): Tratnik, Vesna (Narodni muzej Slovenije) - Lozić, Edisa - Tolar, Tjaša (Institute of Archaeology, ZRC SAZU)

Abstract format: Poster

The poster presents the research of the agricultural hinterland of a hilltop settlement on the Zidani gaber, Slovenia. This settlement was built and fortified in the 6th century. Located high in the hills and west of the main road connect-

ing Emona and Siscia, it flourished after the lowland settlements and towns in its vicinity were abandoned in the early 5th century.

Field investigations at the site were limited to small-scale trial trenching and the collection of small finds is numerous, but most came to museums as chance finds, with no further details. Therefore, for this study, we relied on other research methods and tools from the fields of spatial technologies and natural sciences. The analysis of LiDAR (Light Detection and Ranging) images allowed us to determine the layout of the settlement with its main lines of communication. Analysis of the role of visibility (GIS) provided a valuable insight into the possible function of the settlement. We also conducted an archaeobotanical analysis of the recovered crop remains and evaluated the results in terms of potentially suitable farmland (GIS). Analysis of the economic potential of the settlement indicates that there is suitable pastureland in the immediate vicinity, but no arable land. Therefore, we assume that the economic supply of the settlement had to adapt; the share of arable farming decreased and the share of pasture farming increased. Despite these adjustments, arable farming in the lowlands continued to be essential for the supply of the settlement, so we assume at least a partial continuity of the agricultural use of the lowlands.

B. WINE AND IRON. RESEARCH OF AN EARLY MEDIEVAL HAMLET ON THE SITE PRŽANJ NEAR LJUBLJANA, SLOVENIA

Abstract author(s): Pavlovic, Daša (National Museum of Slovenia)

Abstract format: Poster

A rural lowland village was discovered at the site of Pržanj near Ljubljana (central Slovenia), dated between the 5th and 12th centuries. The site was intensively populated in two phases, late antique (5th – 6th century) and early medieval (7th – 9th century).

Poster presents details noticed during archaeometallurgical, archaeobotanical and archaeometric analysis. Those details are giving us an insight into the transition between Late Antiquity and Early Middle Ages and how these transitions may reflect on the materiality of one rural settlement. We suggest some traditions, taste and knowledge survived the transition, but also the settlement had to change dramatically with time in order to survive, and new relations between space and activities were established.

With archaeometallurgical analysis we discovered that lime was used in ore smelting processes, the process already known in antiquity, thus it may indicate a specific metallurgical knowledge preserved on this site into the Early Middle Ages. Archaeobotanical analysis surprised with the discovery of grape wine seeds, suggesting that know-how in grape cultivation and possibly wine production continued even after the mayor settlement and demographic shift in the area. Analysis in pottery ornamentation showed the same.

In the second phase, the settlement changed from agricultural settlement into a metallurgical production site with no obvious residential area. Archaeometric analysis showed some pottery inclusions were iron slag and, on some sherds, landed drops of melted iron, indicating that pottery was produced on the site and was used in the direct vicinity of the melting furnaces.

The last presented detail is the discovery of two oriental mosaic glass beads of halophytic glass. Because other elements of domestic life are missing in the settlement, we suggest that these beads are more likely to indicate trade rather than remains of female jewellery.

113 BYZANTINE HERITAGE IN PERIL: THE SAFETY OF ARCHAEOLOGICAL SITES (HERITAGE, CONSERVATION, PRESERVATION, NON-DESTRUCTIVE METHODOLOGIES)

Session theme: 3. Heritage Narratives and Representations

Session organisers: Veikou, Myrto (University of Patras) - Vroom, Joanita (University of Leiden) - Tsvikis, Nikos (Institute of Mediterranean Studies - FORTH)

Session format: Regular session

For the first time the International Association of Byzantine Studies (AIEB) and its newly created Commission for Byzantine Archaeology (CBA) propose a session for the EAA Meeting. In doing so, our intention is to disseminate recent archaeological work conducted in our field and to build a broader academic and collegial environment.

Byzantine archaeology, the archaeology of the millennial Eastern Roman empire, traditionally covers a huge geographic area incorporating the Eastern Mediterranean, Southeastern Europe and the Black Sea, extending in periods westwards all the way to cover Italy and much of Northern and Eastern Africa. Nowadays, areas governed by different climate regimes, populated by different people, and regulated under different authorities represent a broad spectrum

of cultures where sites are treated in various ways. In these areas, since the 19th century, versions of Byzantine archaeologies have flourished at different paces and often with contrasting aims.

In this session we aim to address modern challenges of Byzantine archaeology as a wide-spanning international field. Sites can vary from long-standing excavations initiated in the conditions of late colonialism to state-of-the-art contemporary projects reflecting meta- technological breakthroughs. Nonetheless, everywhere archaeology, including Byzantine archaeology, is confronted by extreme social conditions, sometimes exponent local growth or sudden geometric recession of state or national economies, aggressive touristic and housing development, climatic challenges and extreme weather patterns, problems in archaeological finds' storage, resources and infrastructures for sites' management, or even just plain old ravages of war and conflict. We call upon a broad-spanning group of specialists, involved in the excavation, study and management of Byzantine archaeological sites across the Mediterranean, South-east Europe, the Black Sea and beyond to participate in our session and present key-aspects of these challenges and possible policies of counteracting them. The session besides will be also accepting poster presentations.

ABSTRACTS

1 PROTECTING AND PROMOTING THE CULTURAL HERITAGE OF MEDIEVAL SAI (SUDAN): A CONTRIBUTION TO DISCUSSING BYZANTINE ARCHAEOLOGICAL MANAGEMENT

Abstract author(s): Hafsaas, Henriette (Volda University College) - Tsakos, Alexandros (University of Bergen)

Abstract format: Oral

Christian Nubia is one of the three regions of northeast Africa that adopted Christianity as the state religion during the medieval centuries - roughly coinciding with the Byzantine millennium. The other two regions were Egypt and Ethiopia, but only Nubia and Ethiopia remained Christian states throughout the medieval era. Apart from Christianity, Nubia belongs to the Byzantine ecumene, as exemplified by the use of the Greek language for religious and administrative purposes, the titles of secular and religious authorities, and the religious iconography, to mention only the most relevant evidence.

The Christian past of the medieval Nubian kingdoms has left numerous archaeological sites of various sizes and importance. Their threats and salvage have followed the trajectory of the archaeological heritage of Egypt and Sudan in general (e.g., dam building, mechanized agriculture, and gold mining). Cultural heritage management in Sudan also faces challenges due to the gradual changes in the religious and linguistic landscape since the introduction of Islam and Arabic. Despite these challenges, significant investments have been made in Sudan archaeology through initiatives like the Merowe Dam Archaeological Salvage Project, the Qatar-Sudan Archaeology Project, and research grants through the European Research Council. The research approaches have evolved, with a stronger focus on community involvement. The recent political upheavals have also impacted the care for the country, its people and its past.

We will present our earlier efforts at cultural heritage management and community involvement on Sai Island in northern Sudan through our investigations of the medieval era on the island in 2009 and 2010. The proposed contribution aims at adding a Nubiological and Sudanological perspective to the discussions of the management of Byzantine and Byzantine-like archaeological heritage.

2 THE MANAGEMENT OF BYZANTINE HERITAGE IN A FORMER CONFLICT ZONE: THE CASE OF CYPRUS

Abstract author(s): Vionis, Athanasios (University of Cyprus)

Abstract format: Oral

This contribution discusses a success story of heritage management in Cyprus through the pilot study of a late medieval religious/sacred monument in the Larnaca district, carried out in the framework of the Unlocking the Sacred Landscapes of Cyprus project (EXCELLENCE/1216/0362), a collaboration between the University of Cyprus and the Department of Antiquities of the Republic of Cyprus. In an attempt to answer the basic question of "who owns the past", this case study not only provides a paradigmatic and fascinating case in terms of heritage management but also in terms of the reception of the Byzantine/medieval sacred spaces and landscapes today. The aim is to examine how the state, local communities and visitors at the site make claims to, remember and experience religious and secular monuments of the Byzantine/medieval past and their surrounding landscapes, while also investigating how such claims are managed, negotiated and contested. The history and conservation of the monument discussed, the church of Panagia Astathkiotissa, located on a previously conflict zone, unpacks the various discourses in contested areas, and opens the way for re-examining abandonment, conflict, and management practices by local communities and the state.

3 OBSERVATIONS ON THE MANAGEMENT OF BYZANTINE RELIGIOUS BUILDINGS IN KONSTANTINIYYE AROUND 1450S AND THEIR CURRENT STATE OF PRESERVATION AND PRESENTATION

Abstract author(s): Akture, Zeynep (Independent Scholar; Turkish National Commission for UNESCO's Tangible Heritage Expert Committee (Vice President))

Abstract format: Oral

Re-functioning of the Hagia Sophia Museum as the Grand Mosque of Ayasofya has been the most widely followed managerial decisions lately taken about a Byzantine heritage asset, partly due to the potential risk religious use outside of a controlled museum environment may cause for the preservation of the World Heritage monument in its integrity. Among arguments brought up by local conservation experts to ensure intact preservation of the monument's unique figural decorations during the re-functioning and their continued visual accessibility by visitors was the quasi-mythological narrative on the limitedness of physical change introduced during its first conversion into a mosque in the period of Mehmet II. Such narratives characteristically portray Mehmet II almost as a protector of Byzantine heritage who also had a private collection of relics from the pilgrimage churches of Constantinople.

This paper aims to contribute to a critical assessment of this portrayal by presenting research outcomes on the past and current state of preservation of the Byzantine religious monuments that are known to have been demolished or re-functioned in the period of Mehmet II on administratively and symbolically key sites for re-structuring the Ottoman Empire and its capital, under the following grouping:

- (mostly non-religious) domination symbols in and around imperial palaces
- imperial image-making religious monuments and complexes
- imperial institutions (mainly for education)
- religious spaces for the empire's multi-ethnic communities

Conclusions reveal urban design decisions by Mehmet II and renovations by non-Muslim communities other than the Orthodox Greek, making use of the rights brought by the 1856 Edict of Reform, among reasons for the gradual loss of the city's Byzantine religious heritage that has been reduced to comparatively minor and unhighlighted material traces on a thoroughly rewritten palimpsest.

4 BYZANTINE ARCHAEOLOGY OF ISTANBUL THROUGH A CULTURAL HERITAGE PERSPECTIVE: THE LAND WALLS, THE CHURCH OF ST. POLYEUKTOS, THE THEODOSIAN HARBOR

Abstract author(s): Altan, Baris (Brandenburg University of Technology) - Ercan Kydonakis, Ayşe (Independent Scholar)

Abstract format: Oral

The architectural heritage of Istanbul, with respect to its Byzantine past, has been ideologically instrumentalized, particularly over the span of the last two centuries. Archaeology which materializes the past, played a critical role in these endeavours, along with the architectural restoration and conservation projects that 'museumize' cultural heritage discourses. Stakeholders, governmental bodies, and institutions that are tasked to discover Byzantine Constantinople, and to protect its physical remains, have taken varying attitudes over the years, in parallel to their political inclinations, manipulating what heritage to bring to light, make visible, protect, or neglect and forget.

By providing an overview of watershed moments in the history of the Byzantine archaeology in Istanbul and a retrospective analysis of the processes of architectural conservation projects, this paper focuses on a number of Byzantine sites, which are under the directorship of different stakeholders such as Istanbul Archaeological Museums, Istanbul Metropolitan Municipality, and the Directorate of Pious Foundations. Three iconic archaeological sites, notably Theodosian Land Walls, the Church of St. Polyeuktos, and the Theodosian Harbor will be analyzed in detail with respect to their legal status and the conditions of archaeological fieldworks, the circumstances of the subsequent restoration initiatives, as well as the methods of communication with wider public with respect to the equilibrium between archaeological fieldwork and intangible heritage preservation. In doing so, this paper relates to a bigger picture that discusses various practices of urban archaeology in multi-layered historical cities like Istanbul in regard to varying approaches to Byzantine archaeology and cultural heritage policies towards Byzantine urban heritage, often resulting in controversial outcomes.

5 STILL AN ANNOYING RELATIVE? BYZANTINE ARCHAEOLOGICAL REMAINS IN EXCAVATION AND RESTORATION PROJECTS OF 'CLASSICAL' SITES IN GREECE

Abstract author(s): Tsivikis, Nikos (Institute for Mediterranean Studies, FORTH)

Abstract format: Oral

Archaeological work carried out by various institutions in numerous sites across Greece has been innovative in many ways and offering breakthroughs in our understanding of the past communities in both rural and urban contexts. Twenty-first century archaeological practice in Greece has moved away from the old distinctions between 'good' and 'bad' antiquities in terms of their periodization (e.g. Classical against Roman/Medieval/Byzantine/Ottoman) or their building qualities (e.g. Stone/Marble-built against Brick/Mudbrick/Wooden-built) amongst many such qualitative dipoles. Or has it not? Aim of this paper is to critically revisit the older hierarchical model and the current processes of prioritization amongst different date historical remains and the attitudes in preservation and restoration stemming from this process. Our case studies will come from current multi-period archaeological projects in Greece, usually cities and settlements with long historical life and multilayered stratigraphies covering the still 'desirable' remains of the Classical past. In these we will examine the fates and fortunes of post-classical remains, both in their physical qualities and their role in interpretative models.

6 COUNTERACTING DESTRUCTION BEFORE DOCUMENTATION: LOOTING OF ARCHAEOLOGICAL HERITAGE IN THE HINTERLAND OF CHALKIDA (GREECE)

Abstract author(s): Vroom, Joanita - Kolvers, Ritchie (Faculty of Archaeology, Leiden University)

Abstract format: Oral

The first fieldwork-season of the 'Hinterland of Medieval Chalkida' Project (HMC-project) was undertaken in the summer of 2022. During this season, the team members quickly realized they were not the first to identify the value of heritage sites in the region under study. Of the three Byzantine/medieval sites which were surveyed intensively, all three showed signs of clandestine excavations, looting, and quite serious treasure hunting with the use of metal detectors. We decided that these traces of the wilful destruction of the stories of these sites and of cultural heritage in general should inspire archaeologists to make the best of the situation. Indeed, in the 2023 campaign of the HMC Project one of the looter pits was extended to form a properly executed trial trench.

In the longer term, archaeologists should draw conclusions about how to protect their archaeological sources in tune with the times. We suggest that since metal detectorists are plundering sites, survey teams should be allowed to bring their own metal detectors. During the 2022 fieldwork-season the HMC team uncovered nearly a dozen coins and several interesting metal finds without a metal detector – indicating that there is still enough left to be found. Hence, bringing a metal detector by archaeological teams will increase the number of relevant finds, and it will safeguard archaeological information that might otherwise be lost forever.

Also, we suggest that it is essential to cooperate with local communities and make them aware of the significance of their own cultural heritage. We experienced that if local communities were informed about our archaeological activities, there was a significant increase in the understanding of the scientific value of Byzantine/medieval sites in their region. We are convinced that armed with such an understanding, locals will be more inclined to help defend these sites against potential looters.

7 THE BYZANTINE PHASE OF THE SITE OF AMARYNTHOS (EUBOEA, GREECE) AND THE EXCAVATION OF THE SANCTUARY OF ARTEMIS AMARYSIA

Abstract author(s): Krapf, Tobias (Swiss School of Archaeology in Greece) - Greger, Daniela (University of Lausanne)

Abstract format: Oral

The site of Amarynthos in Central Euboea is mostly known for the remains of the ancient sanctuary of Artemis Amarysia. The discovery of one of the last great cult places known from literary sources has become such a sensation that it easily diverted the attention from the numerous later finds of the region: although the reuse of ancient blocks in Byzantine churches played a key role in the location of the sanctuary and the excavations conducted by the Swiss School of Archaeology in Greece and the Ephorate of Antiquities of Euboea have revealed domestic and funerary structures from a Byzantine and Post-Byzantine settlement, these contexts have not received the same recognition. In an effort to protect and promote Byzantine heritage, this paper will present the medieval finds and highlight the difficulties linked to their excavation and preservation in the shadow of the Artemision.

Raising awareness about the Byzantine landscape of Amarynthos area is an important instrument to ensure its protection, especially since Medieval remains incur a disproportionately high risk of destruction. While some monuments have been transformed through continuous use, Byzantine archaeological layers are often located close to the surface

and are thus particularly impacted by the heavy urbanisation of the region. The diachronic survey of the area around Amarynthos launched in 2021 has revealed a number of medieval sites which need to be protected. Especially when religious and socio-political interests are at odds with archaeological concerns, it is essential to share the importance of the Byzantine remains with the local population and visitors alike in order to gain a wider appreciation of the Byzantine heritage and the necessary support for its protection.

8 UNCONQUERED AND WELL-FORTIFIED? NOT ANYMORE: THE PELOPONNESIAN FORTIFIED SETTLEMENT OF GARDIKI IN AN ERA OF CLIMATE AND ECONOMIC CRISIS

Abstract author(s): Kalantzis-Papadopoulos, Dionysios (University of Leiden)

Abstract format: Oral

Located atop a precipitous rocky outcrop of the Arcadian Mt. Hellenitsa, the fortified settlement of Gardiki boasts a dominating position over the uplands of the Southwestern Peloponnese. In the past, its critical location provided the Byzantine Despotate of Morea with an excellent offensive base against the nearby Crusader lands in Messenia for almost two centuries (13th-15th c.). A typical example of a late medieval Byzantine *kastropoliteia* (i.e. fortified town), the site and most of its structures developed over an inhospitable, steep uphill terrain, carefully chosen for its exceptional defensible capabilities. However, after the settlement's destruction by the Ottomans in 1460, Gardiki was left completely abandoned and essentially in limbo until its re-discovery in 1840/41 by J. A. C. Buchon. Ever since the site would only occasionally appear as short notice in various publications of scholars recording the diachronic cultural heritage of the Peloponnese. To this day, Gardiki remains a mostly neglected medieval site left to ruin atop its isolated ridge. The dangers against its remaining standing structures are always-present since its abandonment in the 15th c. A.D.: anthropogenic activities like systematic looting and goat-grazing wreaked havoc on Gardiki's remains for centuries, along with the naturally occurring process of erosion. Accompanied by the newly-arisen byproducts of climate change, such as summer wildfires and severe winter storms, these phenomena threaten not only Gardiki itself, but many similar fortified settlements located in the Peloponnese and beyond. All these challenges call for the urgent introduction of countermeasures by the local communities, authorities, and foremost, by the long-absent academia.

9 THE UNDERGROUND AS PLACE OF WORSHIP. BYZANTINE HERMIT CAVES AND UNDERGROUND CHURCHES IN CALABRIA THROUGH DIGITAL SURVEY

Abstract author(s): Stilo, Francesco (Mediterranean University of Reggio Calabria)

Abstract format: Oral

The research deals with issues related to the theme of the underground as a place of worship, in a dialogue between architecture and archaeology. The use of the underground in Christianity refers both to the cultic purpose (hermit caves, rock churches, crypts) and to the sepulchral purpose. The rock phenomenon is widespread in the Mediterranean area, and in particular expresses, in southern Italy, the moment of maximum propagation between the tenth and eleventh centuries, in close relationship with the Italian-Greek monastic nuclei. For Calabria, rupestrian testimonies consist largely of natural caves and caverns adapted to the purpose or of excavations that are difficult to trace back to sub-terrestrial architectural experiences or to well-defined architectural models.

Through the investigation it was possible to ascertain that to date, for Calabria, the phenomenon is still very obscure, both due to the general absence of dating elements, and due to the chronic lack of written sources (except for hagiographic sources), and, lastly, due to the almost total absence (with rare and commendable exceptions) of archaeological investigations. Among the elements that put the investigated archaeological sites at risk, in addition to those that typically threaten rocky contexts (mainly soil erosion and landslides), there are human factors generated by public inattention to the value of such sites.

The synthesis of a campaign of digital photogrammetric surveys is presented, aimed at documenting the selected case studies, and at the production of itineraries for the knowledge of the Byzantine hermit caves and the underground as a place of worship in Calabria. From this point of view, the production of digital surveys has allowed the creation of a database consisting not only of photographs and graphics but also of three-dimensional point clouds, meshes and textured elements (digital replicas of cavities and details) useful for preserving this Cultural Heritage.

10 CARIČIN GRAD (JUSTINIANA PRIMA): RESEARCH, RESTORATION AND PRESENTATION

Abstract author(s): Ivanisevic, Vujadin (Institute of Archaeology, Belgrade) - Đukanović, Dubravka (Institute for the Protection of Cultural Monuments of Serbia) - Bugarski, Ivan (Institute of Archaeology, Belgrade)

Abstract format: Oral

Caričin Grad is one of the best preserved early Byzantine cities, revealing several fortification lines around the urban core, suburbs, workshop areas, a water supply system which included the aqueduct and dam, and a fairly untouched landscape. This all makes the site unique and gives its researchers the opportunity to study the issues of its establishment,

short life and monuments in a most comprehensive way. Its remains provide a possibility for truthful presentation of this unique heritage.

The long-lasting excavations, ongoing from 1912, were performed primarily within the city limits. Owing to the use of modern technologies - geoelectrical and geomagnetic surveys are being carried out since 1980, GPR surveys since 2015, and LiDAR scanning since 2011 - the outer defences were documented, as well as numerous buildings, which has had a huge impact on our understanding of the city's size and its urban planning. This knowledge has been deepened by traditional field surveys, which all led to the obtaining of accurate ground plans of the forts in the vicinity and the reconstruction of the 21km-long aqueduct route.

This broad approach also dictated a significant enlargement of the protected area of Caričin Grad as an immovable cultural property, from some 0.9 km² to 10 km², now encircling the entire aqueduct line, while the area of the site is already included into the Nature Park Radan, which is crucial for the preservation of landscape and biological diversity.

Moreover, a special investment programme has been launched by the Government of the Republic of Serbia, aiming at preservation and presentation of Caričin Grad, the cultural-historical centre of southern Serbia. Restoration should not be overwhelming and go beyond the reliable presentation of architectural remains. The study of the site's monuments, especially its numerous churches, has already been facilitated with the creation of detailed 3D models.

11 PAST, PRESENT AND FUTURE OF THE BYZANTINE COLLECTION OF THE NATIONAL MUSEUM OF HISTORY OF UKRAINE

Abstract author(s): Skulbodenko, Artem (Treasury of the National Museum of History of Ukraine)

Abstract format: Oral

Since the first archaeological activities in the 19th century, many pieces of byzantine culture had been found throughout Ukraine. Ukrainian Pontic steppes, the Crimean Peninsula and territories related to them saw a huge population migration of different ethnic groups throughout the 4th – 8th centuries. They actively relied on trade and diplomatic relations with Byzantine Empire. Moreover, Kyivan Rus' was the main cultural and trade ally of the Byzantine Empire in Eastern Europe in the 10th – 12th centuries.

The rise of the interest in history among Ukrainian intellectuals of 19th – early 20th century provoked the creation of massive private collections. The Bohdan and Varvara Khanenko Collection of Western and Eastern art was the biggest of them all. After the passing of the owners, it contributed greatly to newly created Ukrainian museums in Kyiv. Artifacts of Byzantine provenance were among the most precious of the collection's pieces.

Since 2014, when the Russian-Ukrainian war began with the occupation of the Crimean Peninsula, many Ukrainian museums were damaged or robbed. Ukrainian historians and archaeologists had been rethinking the context of Ukrainian archaeological and museum heritage. Safety and preservation became as important as implementing new approaches for scientific research and popularizing Ukrainian history and museum culture.

This paper explores the roots, history of accumulation, current state, and future challenges of the Byzantine collection of The National Museum of History of Ukraine. In the wake of the Russian aggression, its entire existence needs to be revised with a comprehensive approach.

116 WEAVING NEW CULTURAL NARRATIVES: INNOVATIVE CULTURAL HERITAGE MANAGEMENT FOR POST-PANDEMIC SOCIETIES

Session theme: 3. Heritage Narratives and Representations

Session organisers: Chroni, Athina (Hellenic Ministry of Education and Religious Affairs; National Technical University of Athens) - Hamari, Pirjo (Finnish Heritage Agency) - Nilhamn, Bonnie (University of Helsinki, Doctoral Programme in Geosciences; "Nilhamn" - Dutch Museum and Cultural Heritage consult company)

Session format: Regular session

The COVID-19 pandemic functioned as a catalyst in helping cultural heritage (CH) management professionals to adopt and experiment with new management and engagement models, for which there is a growing need. On one hand, safeguarding cultural heritage, increasingly under threat due to anthropogenic activity and physical disasters, with climate change emerging as a key component, calls for an urgent global rethinking of the ways we manage our heritage assets. On the other hand, the sudden loss of contact and engagement possibilities with physical audiences and the public forced on a sudden reorientation in the ways these contacts could be maintained in meaningful ways.

The "new normal", as shaped out during and after the COVID-19 pandemic, highlighted new technologies and new ways of engagement as the way forward: new or improved ways of providing on-line access to shared CH assets, working together with communities in valorising CH, innovative methodologies of CH management, hybrid procedures for social involvement, and new models of scientific collaboration. That this is the way, is supported by several CH management charters and conventions, which have advocated for expanded public participation and open data/

open access processes, leading to the implementation of new participatory cultural practices and the formation of new management paradigms. We are still only beginning to understand the value and impact of such approaches.

In order to both understand the value as well as the challenges in new CH management models for post-pandemic societies, this session is inviting contributions to examine e.g.:

- How the sector has responded to the need for new approaches in access and management
- How the role of professionals in the cultural sector has been re-shaped
- What new public engagement methods and processes have been developed
- What the new heritage narratives are which can be shaped in participatory processes

ABSTRACTS

1 OPEN ARCHAEOLOGY: THE SOCIAL NARRATIVE

Abstract author(s): Chroni, Athina (Hellenic Ministry of Education and Religious Affairs; National Technical University of Athens)

Abstract format: Oral

Open access-open data as emerged from the science sector, has very quickly emerged as a trend and practice in the field of culture as well, thus complying with the values-based approach model of cultural heritage management, emphasizing the values attributed to cultural heritage by different interest groups of people. The Faro Convention on the Value of Cultural Heritage for Society/The Council of Europe 2005 proposes a more comprehensive and holistic view on the notion of cultural heritage and emphasizes the important role of people's participation and engagement in cultural procedures.

Nevertheless, an extensive controversy already arises on issues of cultural heritage management, whether exclusively to professionals or not. As expected, archaeology, forming an extensive thematic field in culture, in its overall procedure from excavational to laboratory work and, finally, dissemination to the public, has formed the leading "battle-field": open archaeology and community involvement as a way of raising public awareness in the direction of protecting cultural heritage and preserving cultural memory and identity, as well as weaving an innovative social narrative, form the main points of concern of the specific paper.

2 RELEVANCE, IMPACT, AND CULTURAL HERITAGE: OR HOW TO SURVIVE IN SYSTEMIC CHANGES

Abstract author(s): Hamari, Pirjo (Finnish Heritage Agency; University of Helsinki)

Abstract format: Oral

The heritage sector has a fundamental self-understanding that cultural heritage is valuable as an asset for societies. In contrast, in public debate heritage is increasingly pitted against expectations of economic value, usefulness, and value to society. This perceptual divide has become even clearer during the COVID-19 pandemic, and in an increasingly fragmented, fast-paced, digital, and polarised society. How to argue that heritage is relevant and makes a positive difference in such disruptive times?

An increasing body of evidence shows that heritage in different formats has economic significance. Other forms of value, however, are also increasingly highlighted, and these relate to the cultural and social value of heritage. This paper proposes to approach these from the Faro Convention point of view: understanding the value of participation and communities, understanding impact and relevance. It examines how the sector is part of a systemic change, and how this creates a need for rewording and rethinking its relevance. It proposes that new management and operating models, based on the Faro approach, will help strengthen the sector as they emphasise community- and impact-oriented approaches.

As a practical example of such new management models, it will introduce the MOI impact framework, developed in a European-wide co-operation project. This self-evaluation framework for museums and cultural organisations helps organisations identify internal development areas connected to impact, and helping them identify potential development areas in their activities and ways of working in a dialogical manner. This will help organisations to find their impact goals and refocus their work to be more relevant and sustainable.

3 APPLIED TECHNOLOGIES AND HUMAN SCIENCES FOR WEAVING COLLECTIVE MEMORY

Abstract author(s): Megalooikonomou, Pavlos-Stylianios (National Technical University of Athens) - Chroni, Athina (Hellenic Ministry of Education and Religious Affairs; National Technical University of Athens)

Abstract format: Oral

The concept of collective memory, introduced by Maurice Halbwachs in 1925, was based on ideas of Emile Durkheim, declaring that societies require continuity and connection with the past to preserve social unity and cohesion. Cultivating a relationship with the past, enhances societal well-being in the present and enhances the sense of belonging to a wider community. Furthermore, remembering is vital for sustaining plurality and diversity in terms of a global citizenship, ensuring solidarity and human rights while protecting cultural rights and preserving individual and collective identity and consciousness. Collective perception of the past is highly affected by developed information communication technologies, such as the internet, affecting us, both as individuals and as a society, on the way of creating, storing, and recalling information.

Cultural disasters, as the fire damage of the National Museum of Brazil in 2018 and of the Notre Dame of Paris one year later, combined with extreme situations as the COVID-19 pandemic and the war in Ukraine still going on, call for urgent cultural plans and actions on cultural heritage integrated management issues: documentation-preservation-monitoring-highlighting. The heterogeneity of cultural assets results in a complex universe of requirements: applied sciences and new technologies have proven to be successful in documentation and data management; as a result, they have already gained a leading role in the specific field, also adopting and proposing participatory documentation procedures, such as crowdsourcing and participatory GIS projects, combined with the substantive (re)use of digital assets as well as with advanced technological achievements mostly in the scientific fields of VR/AR/MR, of chatbots, as well as of digital storytelling. The related procedure to be adopted on a case-by-case basis will be the main component to play the decisive role on issues of shaping collective memory of our times as well as of the times to come.

4 BUILDING A BRIDGE BETWEEN THE CULTURAL HERITAGE AND THE VISITORS VIA VR: VISITING EPHEBUS VIRTUALLY

Abstract author(s): Denker, Ahmet (Istanbul Bilgi University; University of South Florida)

Abstract format: Oral

The further away Covid pandemic slips into the past, the more it unravels how everything has been reshuffled in the cultural heritage (CH) management. In the face of the disappearing visitors around the world, reaching the CH has undergone radical changes, forcing the creation of new contact ways where visitors can gain remote access. Enabling online access to the CH assets and sites shaped the 'new normal' during the coronavirus lockdown. The impact of this 'new normal' is likely to continue to be upon us decades down the line.

The goal of this article is to look at exactly what innovative solutions VR technology can bring, both for museums and heritage sites, and for their visitors, in such extraordinary times (there's always the apprehension it could hit worse again). Although we may still be years away from building a truly seamless bridge between the visitors and the CH virtually, we should now assess where we are and consider where we are headed. The ancient city of Ephesus, which is home to one of the seven wonders of the world is discussed as a case study in this context.

Ephesus, the metropolis of Rome in the East, is undoubtedly one of the best-preserved historical cities in the world – a place where the past greets you around every corner. This is what spurred the author to bring Ephesus to her visitors during extraordinary times like the coronavirus using VR. The ability of the 'new normal' to engage the viewer, to evoke a mood, a sensation, and a presence is scrutinized within the context of visiting Ephesus virtually.

5 VENI VIDI ... : PUBLIC CULTURAL HERITAGE MANAGEMENT

Abstract author(s): Nilhamn, Bonnie (Helsinki University)

Abstract format: Oral

The last three years' pandemic has forced the Cultural Heritage field to rethink its manners of engaging and reaching out to the public. The last year 2022, when the pandemic ceased, we finally could slowly return to normal life... or did we? Did we really want to go back to "normal", as it seems that these years of self-reflection have changed both our field's circumstances and our public.

It is the duty of the archaeologist, as of the scientist, to reach and impress the public, and to mould his words in the common clay of its forthright understanding." (Sir Mortimer Wheeler 1956, p. 224)

Heritage management as a concept has transformed, and today we want to do more than "reach out and impress" our audience. The dialogue has increased, and with it, our perception of participation and ownership. The outreach work of museums, (local) heritage societies and professional archaeologists towards the public have been defined as Public,

Community, Open Archaeology etc., all with their own twist. For simplicity here, we may divide the engagement and outreach focus into two main fields: Science communication and Participation. We have discussed this vividly during the previous EAA 2021 and 2022, mainly focusing on tools and methods. In this paper, we are going to do a quick recap of public Cultural Heritage Management, looking back on the past and present and discuss the future where these tools and methods have brought forwards new concepts of participation, (communal and individual) ownership and even appropriation. Can we still win the audience?

A. WORKING TOWARDS AN INTEGRATIVE APPROACH: COASTAL AND MARINE CULTURAL HERITAGE AND MARINE PROTECTED AREAS IN THE MENA REGION

Abstract author(s): Nikolaus, Julia - Tews, Sophie - Ray, Nick - Breen, Colin (Ulster University)

Abstract format: Poster

Over the past two decades Marine Protected Areas (MPAs) have emerged as one of the primary legislative initiatives used to protect the marine environment, recognised as an integral management mechanism used to address climate change and as a driver for sustainable community development. To date, these areas have been used primarily to protect the natural environment. However, there is a clear justification and need to integrate, oftentimes extremely vulnerable, cultural heritage into this MPA network. The integration of both tangible and intangible cultural heritage into these frameworks would support enhanced social cohesion, and a strengthening of place-making. The Maritime Endangered Archaeology project (MarEA) has recently started to develop a model that would allow for a more inclusive and meaningful integration of coastal and marine cultural heritage to MPAs.

The main task of the MarEA is to rapidly and comprehensively documents and assess threats to the maritime and coastal archaeology of the Middle East and North Africa (MENA). Through quantifying the nature and extent of the cultural resource it is anticipated that the project's digital platforms will provide readily available, open access data to MPA managers and will encourage deeper engagement with the heritage resource. This poster will discuss how to actively consider the integration of coastal and marine cultural heritage into existing individual protected area plans to create sustainable and resilient protection strategies for both, natural and cultural heritage. This will pave the way for us to consider ways in which existing boundaries could be extended to facilitate greater inclusion of coastal heritage, and to consider the potential for future designation and protection.

117 ARCHAEOLOGY: A HOSPITABLE DISCIPLINE? HOW ACCESSIBLE IS ARCHAEOLOGY IN PRACTICE? EXAMINING THE FUTURE OF INCLUSIVE ARCHAEOLOGICAL PRACTICE

Session theme: 3. Heritage Narratives and Representations

Session organisers: Sommen, Marloes (Enabling Archeologie) - Clements, Sarahjayne (Enabled Archaeology Foundation; University of Hertfordshire)

Session format: Session with keynote presentation and discussion

How accessible is the past? And how accessible is studying the past? Is it equally accessible to everyone? How welcoming is the discipline we operate in? What exactly do we mean when we speak of accessibility? Do we also consider feeling welcomed as part of accessibility? And what makes us feel welcome? Is it a representation of people who look like us? Is it the availability of aids? Is it the use of inclusive language? Could finance also play a part in accessibility? Can everyone afford to visit or study our heritage, and what do our earnings as archaeologists have to do with our well being?

We believe that archeology can and should be more accessible, diverse and inclusive! Archaeology belongs to everyone and everyone who wants a place in it should be given those opportunities. We want to provide the tools to make archaeology accessible to everyone within the triangle of education, the workplace and public outreach. We collaborate wherever possible to draw on the collective experience of others and to share best practice which is why Enabled Archaeology Foundation and Enabling Archeologie have partnered up on this session to take this international. Accessibility of the past, for us, means both the physical/mental/social accessibility of arriving at a place where the present is accessible. To arrive at this inclusive place, we have a joint goal of creating awareness and embedding equality, diversity and inclusion into all areas of the heritage sector.

What can we as archaeologists learn on these matters from each other? From practices in different countries, other disciplines within the field of heritage but also other disciplines beyond heritage.

Our session will consist of a short opening element about the EAF, EA and DAN: what we stand for, what we do and how we cooperate. We have two keynotes presented by two exciting presenters, a set of excellent papers from scholars across Europe, and a panel discussion with a high-profile guest to stimulate the debate. Our first keynote speaker

will tell us more about accessible and inclusive pedagogies for archaeology students and our second keynote speaker will remind us what the added value is of working integrally, crossing regional, national but also disciplinary borders.

ABSTRACTS

1 **ARCHAEOLOGY AND ACCESSIBILITY: THE ROLE OF SCHOOL AND DIGITAL TECHNOLOGY TO THE ACCESSIBILITY TO THE PAST**

Abstract author(s): Dimopoulou, Sotiria (Archaeologist)

Abstract format: Oral

This paper aims to present how school education contributes to knowledge and accessibility to the past. Is it possible to enable students to visit museums and archaeological sites mentally through educational programmes? Could this mental visit be an incentive for physical presence?

The paper also focuses on the fact that in today's multicultural school environment it is very important that students learn more about archaeological science and broaden their knowledge. The contribution of digital technology is also very important because it makes archaeological sites, – often unknown to the public –, accessible. Beyond this, and because today's education is based on digital technology, it becomes more attractive for both teachers and students to participate in such interactive activities. We will also examine how far this process enhances diversity and integrates the participants into a collective social experience without discrimination. Is it possible to break down preconceptions about countries with an important cultural heritage through archaeology? How far does the archaeologist contribute and how? Is it feasible for this educational system to be included in special schools with people with disabilities?

2 **PROFESSIONAL ARCHAEOLOGY, ALTERNATIVE VOICES AND CULTURAL SUSTAINABILITY**

Abstract author(s): Gerberg Høstrup, Sebastian (Aarhus University)

Abstract format: Oral

Many alternative viewpoints revolving around our past are continuously having an impact. Their public attraction coupled with the incommensurable nature in their relations to current scientific paradigms has led to a widespread hatred towards such viewpoints within professional archaeology. A general lack of functioning forms of involvement with alternative archaeology has led to a stalemate and efforts directed at engagement has seemingly evolved to a need for distancing professional archaeology entirely from that of alternative viewpoints. Archaeology therefore finds itself in an awkward position regarding the many alternative voices which find their way to the public. This paper questions earlier as well as present forms of professional engagement with alternative discourses, and from theoretical perspectives such as epistemological anarchism and democratic relativism a series of rationales behind facilitating new methods of involvement with which archaeology can recommence engaging the phenomenon are presented. These suggestive remarks emphasize a broad professional collaborative effort coupled with a positive discourse and the use of public inclusion as all being essential regarding future efforts guided towards involvement with the alternative archaeologies.

3 **SURVEYS ON SURVEYS ON SURVEYS: EXPANDING OUR DISCIPLINARY KNOWLEDGE TO IMPROVE ACCESSIBILITY**

Abstract author(s): D'Aprix, Michael (University College London)

Abstract format: Oral

Our understanding of what archaeology is, how it is done, who does it, and with what tools is at an all-time low and this lack of disciplinary knowledge creates a major hurdle for accessibility. This hurdle originates in the discipline's reliance on a 'craft process' where knowledge is passed from archaeologist to archaeologist in an almost hereditary method; experiencing, seeing, and feeling are the most important factors to learning how to be an archaeologist.

This incredibly valuable practice is becoming unsustainable as the diversity and innovation of archaeology expands. A mereological problem is developing where we can no longer understand how different parts of our diverse discipline work together. Archaeology is becoming inaccessible despite our best efforts to make archaeology as accessible as possible. Increasingly variable methods, standards, qualifications, and basic definitions make it difficult to communicate effectively and makes it difficult to teach or guide individuals to becoming an archaeologist.

This paper will address the complicated landscape of archaeology and how its increasing fragmentation has led to an overwhelming process that restricts accessibility. To overcome this issue, we must begin to utilize the most valuable resource in our field – a population of informed and knowledgeable practitioners who can help us understand the realities of archaeology from the bottom-up.

We can no longer divide our knowledge into smaller and smaller chunks and must start to understand, analyze, and make decisions informed by knowledge collected from the entire discipline, not specific groups, individuals, or organizations.

Much of the research necessary to understand archaeology on a more granular level is already being conducted albeit in a piecemeal and fragmented manner. This paper calls for an overarching and collaborative approach to surveying and understanding our field so we can make more well-informed decisions about our discipline's future.

4 CULTURAL SUSTAINABILITY THROUGH ACCESSIBILITY: EVALUATION TOOLS APPLIED TO THE NATIONAL ARCHAEOLOGICAL MUSEUM OF TARANTO (ITALY)

Abstract author(s): Frascella, Selene (University of Barcelona)

Abstract format: Oral

The approval of the Sustainable Development Goals has given a strong impetus to research on sustainability and cultural sustainability (UNESCO 2001). Despite efforts in this direction, a clear definition of the latter hasn't yet been formulated (Soini, Dessein 2016). The debate is still open. Nevertheless, what unites all the different ways of understanding this concept is the need to guarantee access to heritage as a prerequisite. Cultural sustainability cannot take place unless we first guarantee everyone a relationship with the heritage that is free of physical, cognitive, and social barriers. In this sense, the level of accessibility of heritage can be considered one of the indicators of cultural sustainability. However, measuring and evaluating accessibility can be challenging. This is due to the multiplicity of aspects, both qualitative and quantitative, that need to be considered, as well as the scarcity of resources that cultural institutions often face. In this context and in the framework of the project Intangible Cultural Heritage Confronting the Challenges of Cultural Sustainability (PID2021-123063NB-I00), the present research intends to contribute to this study field by presenting the results of non-participant observations of the audience at the National Archaeological Museum of Taranto (Italy). This method makes it possible to assess, through specific indicators, the effectiveness of the set-up as a means of communicative mediation between audience and exhibited works. Based on the degree of interaction between visitor and exhibition elements, these data make it possible to understand whether the museum's solutions meet the audience's needs and, above all, whether they constitute physical, perceptual, or cognitive barriers to heritage accessibility. In conclusion, this paper will demonstrate how through simple actions, often related to undervalued elements and requiring limited economic efforts, we can achieve better results regarding accessibility, measure the exhibition's role in cultural sustainability and, consequently, contribute to its practice.

5 ARCHAEOLOGICAL RESEARCH, INCLUSIVENESS, AND MUSEUMS: TRANSFORMING ARCHAEOLOGICAL NARRATIVES INTO A VEHICLE TO BUILD SOCIAL JUSTICE AND EQUALITY

Abstract author(s): Romagnoli, Francesca - Prados, Lourdes (UAM - Universidad Autónoma de Madrid)

Abstract format: Oral

The interpretation of the past in contemporary western societies is biased by Eurocentric and androcentric misconceptions. This is evident in archaeological museums in which only a part of the society is represented and valued as active in the construction of past cultures. A reassessment of exhibition contents from the viewpoint of feminist, gender, queer, and decolonial archaeologies is essential to foster inclusion and equality claiming the rights of representation of groups usually invisible in archaeological museums. We present a novel research project aimed at making visible such social groups: women, childhood, elderly persons, other ethnic groups, and other gender constructions. To reach this aim is basic to strengthen the collaboration between scientific research in archaeology, museum studies, and the socialisation of archaeological knowledge. We present and discuss some examples from the National Archaeological Museum in Madrid. The final goal is to make the museums inclusive spaces fostering collective social reflection and in which all the members of society could find themselves as active agents in the construction of the past. This is possible because the archaeological and scientific data show this diversity, and we are now able to tell the stories of groups invisible to this date. Embedding this diversity is a responsibility of Archaeology in the XXI century to build a more equal and just society in the present. To make a real social impact in archaeological museums it is basic that inclusive perspectives are systematically integrated in the permanent exhibition and not confined in temporary, thematic itineraries. Our project also includes the search for feasible solutions allowing the museums to easily implement their permanent exhibitions with gender perspective contributing to the generation of more inclusive museographies and, consequently, a better society. Some of these solutions will be briefly presented and discussed in this work.

6 HERITAGE FOR ALL? OPTIMIZING WAYS OF PRESENTING CULTURAL HERITAGE PLACES

Abstract author(s): Toreld, Christina (Bohusläns Museum) - Lindskog, Daniel (Arkeologibyrån) - Lindholm, Kristina (Bohusläns museum)

Abstract format: Oral

How can cultural heritage places become accessible for all? Is there such a thing as universal design when it comes to presenting cultural heritage? In our rights perspective-based project DigroKult we have investigated how people with visual and cognitive disabilities experienced filmed, audio-described and live guided tours in a series of cultural landscapes with prehistoric och historic remains in Bohuslän, Sweden. Our aim was to design more understandable and engaging cultural heritage experiences through the film-media, taking into account all aspects and preferences provided by our target groups. Building on our findings from the project we would like to discuss how cultural heritage places can best be made accessible to a wide public, regardless of ability or disability. By offering a wide range of different on-site and digital methods of presentations, we may both promote easy access to heritage places and at the same time minimize negative impact on the sites.

131 BETWEEN MINIATURES AND MODELS: INTERDISCIPLINARY APPROACHES FOR ANALYSING SMALL OBJECTS MEANINGS, USES, AND CONTEXTS IN THE MEDITERRANEAN AND SURROUNDING AREAS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Scaro, Agustina (Institute of Andean Ecorregions (CONICET) - Calomino, Eva (University of Granada)

Session format: Regular session

In recent years, specific analyses have been undertaken on small-sized objects, considered “special” finds in various archaeological sites in the Mediterranean and surrounding areas. Several categories have been proposed for their study and comparison, such as “models”, “miniatures”, “miniaturised items”, or “special finds”. In past research a wide variety of elements made of different raw materials (containers, figurines, amulets, seals, personal ornaments, domestic or recreational tools, among others) have been tentatively interpreted as religious or artistic objects. Today, new questions seek to quantify, contextualise and interpret these objects to understand their role in various practices of past societies.

This session aims to address interdisciplinary approaches to the study of small objects, problematising the proposed categories, their contexts, meanings, and possible roles. We encourage the participants to propose reflections on interdisciplinary theoretical and methodological aspects that underlay the concepts of miniature, model, and “special finds”, considering the type of objects included within these categories, and their explanatory capacities, the role of small objects in symbolic and ritual practices and daily activities, and in the interactions and influences between societies.

In the hope of comparing categories and theoretical and methodological aspects for the study of small objects, and their meanings and uses, as well as issues connected to their conservation and public presentation, we welcome papers from various contexts from prehistoric times to the contemporary period that contribute to a greater understanding of the Mediterranean and surrounding areas.

ABSTRACTS

1 MINIATURE ANCHORS, FISHING WEIGHTS... OR BOTH?

Abstract author(s): Yamasaki, Mari (Polish Centre of Mediterranean Archaeology, University of Warsaw) - Meneghetti, Francesca (Cyprus American Archaeological Research Institute)

Abstract format: Oral

The most salient class of material culture that stands for Bronze Age seafaring in the Mediterranean is constituted by stone anchors. These objects, first identified as anchors by Honor Frost in the 1960s, are large stones, roughly triangular or trapezoidal in shape, with one rope hole at the top and, in the so-called composite anchors, two additional stock holes at the bottom corners. Their size was widely diverse, from well over a ton to just a few kilograms.

This paper focuses on the smaller end of the category, on anchors so small that they could not be used in steadying even the lightest fishing boat. Ever since their discovery, the question was: are these examples of miniature stone anchors or are these fishing weights and, as such, not a case of miniaturised objects at all? Indeed, a very effective method called set-long-line fishing employs stone weights to hold the line to the bottom of the seafloor. However, admitting that these could be fishing tackle, their anchor-like shape would not have been functional. On the contrary,

particularly in the case of the composite stones, this would have made the weights less efficient in keeping the line in place!

We will review the evidence using theoretical and methodological approaches drawn from archaeology and neighbouring disciplines, for an interdisciplinary study of small objects; and seek an answer to the question: are these miniature anchors, fishing weights... or both?

2 FUNERARY FAKE FOOD: LEAD FEASTING UTENSILS, TERRACOTTA FOOD, AND SYMBOLIC CONSUMPTION IN PRE-ROMAN SOUTHERN ITALY

Abstract author(s): Hoernes, Matthias (University of Vienna)

Abstract format: Oral

Food, foodstuffs, and the objects used in the preparation and consumption of food have always been central to people's daily lives and to their sense and expression of social identity. This paper examines food-related miniatures and models from pre-Roman southern Italy in order to understand the role of food, its symbolic consumption, and the significance of „special objects“ in ritual practices. It examines two groups of „fake food“ objects that appeared in many funerary assemblages in Campania, Calabria, Basilicata, and Apulia in the 4th century BCE: firstly, feasting utensils made of lead, such as roasting spits, firedogs, candelabra, knives, and forks, and secondly, food-shaped terracotta objects such as fruit, bread, cheese, and sweets. The paper collects and classifies these objects, contextualises them within the burial assemblages and interprets the evidence at both local and supra-regional levels, also by comparing the funerary fake-food objects with items from cult places, as well as with images in contemporary funerary painting in some of these regions. Based on concepts of symbolic consumption and material citations, the paper aims to show how food-related miniatures and models had the potential to express social identities and to link the deceased and the living, the household and the tomb, as well as different places and times.

3 JUGGLING SIZE, TYPOLOGY, AND PEOPLE: AN INTERDISCIPLINARY STUDY OF THE SMALL-SIZE POTTERY FROM LATE BRONZE AGE CYPRUS

Abstract author(s): Meneghetti, Francesca (Cyprus American Archaeological Research Institute)

Abstract format: Oral

Miniatures and miniaturisation are common to many cultures and periods worldwide. However, scholarship has consistently focused on them only in the last decades. That left a gap in the study of small objects, which are usually interpreted as votives or cheap copies when found during excavations, following an interpretative bias that frequently does not take into account the context, objects' features and actors involved with them. Thus, how can we recognize in the archaeological record these artefacts and study them with the minimal bias possible?

To this end, the paper proposes an interdisciplinary approach to examine the small-size pottery from Athienou-Bamboullari tis Koukounninas (Cyprus). Dated between the 16th and 12th cent. BCE, Athienou-Bamboullari tis Koukounninas is a long-lived site located in the eastern Cypriot hinterland, whose Stratum III (late 16th-end of 13th cent. BCE) yielded circa complete 10000 vessels, among them a high amount of so-called miniature pots. Despite the final publication of the excavation, we do not know the exact quantity of the miniature pottery or the criteria used to identify it as such. Its function falls under the catchall votive umbrella, while it is unclear whether its context could be ritual.

Therefore, using a combination of archaeological analysis and anthropological theories, such as miniaturisation, ritual-ity, haptics and apprenticeship, the paper seeks to solve some issues around this small but mighty material.

4 POTTERY UNGUENTARIA. AN INTEGRATIVE APPROACH TO SMALL OBJECTS PRODUCTION AND CIRCULATION ACROSS THE WESTERN MEDITERRANEAN (6TH TO 1ST CENTURIES BC)

Abstract author(s): Scaro, Agustina (Institute of Andean Ecoregions - CONICET-UNJu)

Abstract format: Oral

The first pottery unguentaria appeared throughout the Mediterranean in traders' hands and were distributed from Palestine to the Iberian Peninsula. In general, they have not been the subject of comprehensive systematic studies. The main papers aimed to establish morphological typologies of chronological value, with contemporary use and manufacture periods since they may have been discarded or used as funerary goods once they were empty. The function of these small vessels is not evident. Due to their characteristics and reduced size, they have been called unguentaria, balsamarii, or lacrimarii, considering them as small containers of aromatic oils or cosmetic lotions related to funerary rites. This interpretation responds to unguentaria main finding in tombs, although other uses must not be disregarded, for example in cosmetics. This paper aims to present theoretical-methodological alternatives to evaluate these small finds in Western Mediterranean during the 6th to 1st centuries BC from an integrative perspective that includes qual-

itative-quantitative ceramic studies with archaeometric, contextual, and network analyses, looking to characterise the technological traditions linked to their production, as well as their uses and meanings, exploring their metaphorical, iconic, and skeuomorphic value. Considering the relationship between the life-cycle of this specific ceramic production and the networks established among the societies that produced and used them, ceramic unguentaria as analysis subjects will provide information on the way pottery production and circulation processes were linked to changes, continuities, and innovations in technological traditions, as well as their implications in the constitution of practice and identity communities structured throughout the Western Mediterranean.

5 THINKING THROUGH PEAK SANCTUARY RITUALS: APPROACHING THE MINDS EMBODIED AND EMBEDDED IN ANTHROPOMORPHIC FIGURINES FROM CRETAN PEAK SANCTUARIES

Abstract author(s): Solomou, Anastasia (Independent Researcher)

Abstract format: Oral

Minoan peak sanctuaries were in use from the EMIII/MMI-LMIA/LMII periods in Crete. A range of interpretations have been suggested regarding the nature of these sites, with that of spaces for the performance of religious rituals involving drinking, feasting, and deliberate ritual breaking of objects such as figurines or cups being most widespread. One of the defining characteristics of these sites are the clay anthropomorphic figurines, which are observable in large quantities on nearly all such sites, and which are seldom associated with other contexts. The exclusivity of these artefacts renders them one of the most suitable areas of research with a view to re-examining and re-interpreting peak sanctuaries, providing information regarding the differentiating qualities of these sites in relation to other ritual or domestic ones. This paper explores the clay anthropomorphic figurines which depict an individual standing upright, with raised arms, folded at the elbow. The analysis follows a materialistic and cognitive approach, drawing on concepts of the distributed mind with a view to highlighting the role of these objects as part of a larger cognitive network, as a shared exographic memory system, shared by the participants of the peak sanctuaries throughout Crete. Through this approach the figurines are seen as vital active constituents of the cognitive processes taking place in these sites.

6 "SPECIAL FINDS" IN THE JEWISH QUARTER OF LORCA CASTLE: THE STUDY OF METAL OBJECTS

Abstract author(s): Molina-Campuzano, María Isabel (University of Murcia)

Abstract format: Oral

This proposal focuses on the study of metal objects recovered from the late medieval Jewish quarter of Lorca castle (Murcia, Spain). It was located in the south-east of the Iberian Peninsula and it was a defensive, residential and symbolic place for power during the Middle Ages. In addition, this castle occupied a defensive role as an active border zone between the Christian and the Islamic areas of influence (Castilian kingdom and Nasrid Kingdom of Granada).

Since 2009, an interdisciplinary team from the University of Murcia has been leading a research project, in order to define the particularities of the Jewish presence in Lorca from a strictly material perspective. Within the framework of interdisciplinary, this research includes an archaeological study of metal objects recovered from the domestic area of the Jewish community. The aim is to explain some of the "special finds" (such as horse and personal ornaments, thimbles, rods) and the archaeological context of their discovery (houses and spaces), since the provenance of metal objects is often unknown. Furthermore, another objective is to determine the possible usefulness of the pieces (daily activities) and the possible exchanges and influences that took place between Christian society and the Jewish minority located in the castle (14th-15th centuries).

To conclude, this paper presents one part of an interdisciplinary study of the Jewish castle of Lorca, with a recent research project (Séneca - 21979/PI/22) and it also takes part of the PhD I am carrying out at the University of Murcia.

7 EGYPT AND THE WESTERN MEDITERRANEAN. TOWARDS AN UNDERSTANDING OF EGYPTIAN SPECIAL FINDINGS IN THE IBERIAN PENINSULA

Abstract author(s): CALOMINO, EVA (Departamento de Prehistoria y Arqueología. Facultad de Filosofía y Letras, Universidad de Granada)

Abstract format: Oral

It is a well-known fact that Egypt has had great influences, maintaining various types of commercial and political relationships, with other institutions and social groups in several areas of the eastern, central, and western Mediterranean. It is towards the beginning of the first millennium BC that there is a considerable increase in the archaeological record in the Phoenician colonies of the West, the western Mediterranean being integrated into the circuit of exchanges and relations more assiduously and including the appearance of Egyptian objects in such sites. It becomes evident that the problem of the presence of such objects found in the western Mediterranean -specifically in the Iberian Peninsula- is

closely linked to the mercantile and intermediary activities of the Phoenician colonies, which were related to Egyptian and Levantine port centers -in addition land routes- and with other commercial colonies. Although works and publications have been addressed about the understanding of the Phoenician case, the exchange routes and the archaeological sites and Phoenician-Punic objects in the western area, collections and sets of objects of Egyptian origin in the Iberian Peninsula -which some authors recognize as 'orientalizing'-, an exhaustive identification and systematization has not been carried out in the Iberian Peninsula about the diverse sets of Egyptian objects, their finding contexts and the possible relationship with areas of commercial origin and exchange. Among these sets, various objects classified as 'small finds' have been found -which usually include figurines, scarabs, amulets, seals, jewelry, etc-. The communication is a proposal to incorporate the study of special findings of Egyptian origin found in archaeological sites of the detailed area and to preliminarily interpret how their study contributes to the knowledge of the relations between the eastern and western Mediterranean towards the first millennium BC.

136 PARISH BURIALS AND MEMORIALS: COMMUNITY MEANINGS AND ENGAGEMENT

Session theme: 3. Heritage Narratives and Representations

Session organisers: Mytum, Harold (University of Liverpool) - Lipkin, Sanna (University of Oulu)

Session format: Discussion session

Churches and their associated burial grounds represent one of the most visible elements of heritage in many communities across Europe. These heritage assets may be managed by church or local authorities, but they are visited and valued by local communities even if they are now closed to new burials. This session explores how projects from a variety of countries have engaged local communities in recording, analysing, managing, or interpreting their churches and burial grounds. Local heritage assets such as these provide excellent resources for formal and informal schools and adult education, and they can also be interpreted to enhance tourism. Natural and cultural conservation can be promoted, although papers may explore how conflicts between competing priorities have been resolved. Many churches and graveyards provide valuable quiet places in urban environments, and archaeological perspectives can demonstrate how such spaces can enhance wellbeing and community identity. Some churches have active congregations that do not appreciate the heritage dimension of the places in their care, and those now redundant can be given new significance through archaeologists encouraging public engagement and providing interpretation. This session explores the many ways in which archaeologists and communities engage with churches and burial grounds and shares best practice and innovative approaches.

ABSTRACTS

1 DEVELOPING A COMMUNITY APPRECIATION OF MONUMENTS BEYOND THEIR TEXTS: EXPERIENCES IN ENGLAND AND WALES

Abstract author(s): Mytum, Harold (University of Liverpool)

Abstract format: Oral

The community recording and interpretation of burial grounds has been a popular enterprise in England and Wales for decades, but until recently efforts were largely concentrated on recording the inscriptions. Recent projects have updated the Council for British Archaeology recording system and produced advice documents and examples of interpreting the material aspects of memorials. This paper considers the earlier system and the revised version, and how it has been used – or ignored – by local communities. The community value of burial grounds is not only related to heritage, and the charity Caring for God's Acre provides training and encouragement to engage with these landscapes as places of both natural and cultural heritage. The varied approaches to conservation and management have to build on existing community interests and assumptions, but can challenge the latter by training and exposure to new ways of appreciating the resource. Moving the community beyond an appreciation of churchyard ecology and inscriptions is the challenge faced by archaeologists, but there is some evidence that the richer understanding coming from an archaeological approach is taking hold in some locations.

2 AT THE HEART OF THE COMMUNITY: TRANSFORMATION OF THE PARISH CHURCH AND GRAVEYARD OF ST MARY'S, KILKENNY

Abstract author(s): O Drisceoil, Colín (National Monuments Service)

Abstract format: Oral

For eight centuries the medieval parish church of the Blessed Virgin ('St Mary's') was at the heart of the local community but it had fallen into serious dereliction in the late 20th century. Between 2014-17 state and local authorities, community organisations, architects, archaeologists, designers and builders worked collaboratively to transform the

thirteenth century church and its graveyard from this dereliction into the award-winning 'Medieval Mile Museum'. Archaeological excavations (by the speaker) that were undertaken in tandem with the conversion brought to light extensive medieval and early modern funerary, structural and artefactual remains that effectively materialised the key spiritual roles the church played for the merchant and wider urban community throughout its long history. Whilst these discoveries challenged the progress of the project, the level of community interest in the excavations ensured that archaeology was proactively and enthusiastically used to define an architectural solution. The result is a successful melding of the old and the new that has restored the church to its rightful place at the heart of the urban community as a major new tourist attraction for the city.

3 COMMUNITY AND ARCHAEOLOGY AT ST PATRICK'S ROMAN CATHOLIC CHURCH, TOXTETH, LIVERPOOL, UK: EVOLVING RELATIONSHIPS

Abstract author(s): Fairley, Anna - Mytum, Harold (University of Liverpool)

Abstract format: Oral

St Patrick's is a historically significant Catholic church in Liverpool which was completed in 1827 and is still in use. The church members recently contacted the Department of Archaeology at the University of Liverpool for advice on how to manage their heritage. This has led to an evolving relationship between the church authorities, community volunteers, and the wider community that has involved recording and investigating various aspects of the heritage. This has included work in the crypt and its burial pits and vaults, as well as in the graveyard studying the extant memorials. This paper will explore the ways in which archaeological professionals, students, parish members and the local community have been involved with or have learned from these collaborations. We will also consider how different aspects of the past matter more to the various stakeholders, and that these different interests lead to success if they are held in positive balance.

4 CHURCH BURIALS AND MEMORIALS: EXPERIENCES WORKING WITH THE PARISH AND THE PUBLIC IN HAUKIPUDAS, FINLAND

Abstract author(s): Lipkin, Sanna (University of Oulu) - Kallio-Seppä, Titta - Tranberg, Annemari (Museum of Torne Valley) - Väre, Tiina (University of Oulu)

Abstract format: Oral

This paper will present our experiences with working with Haukipudas Parish in Oulu. In collaboration with the parish, we have surveyed the 17th and 18th-century church burials below timber floor and conducted scientific research on the remains and associated coffins and fabrics. In addition, we have documented the old grave memorials and cemetery flora in the parish's old cemetery that is no longer in use. For local people the cemetery bears both memories of communality and kinship and they have expressed how it should be cherished in the future. As our work has raised public interest, the parish representatives wanted to open a museum exhibition at the church. This exhibition, opened in September 2022, represents our latest research results and is located in the old sacristy of the church. In addition, with local museums we have produced a series of temporary exhibitions. We find that these exhibitions have been an easily approachable way to give the audience a possibility to discuss death that is often found a difficult and troublesome topic. Our experience is based on both discussion with the parish representatives, the audience, and the feedback surveys on the exhibitions.

139 CLIMATE CHANGE, HUMAN IMPACT AND THE CHALLENGES OF ASSESSING THE SUSTAINABILITY OF ARCHAEOLOGICAL HERITAGE

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Castiello, Maria Elena (Institute of Archaeological Sciences, University of Bern; Incipit-CSIC) - Morera Noguer, Núria (Universitat Autònoma de Barcelona; German Archaeological Institute) - Antolín, Ferran (German Archaeological Institute; IPAS, University of Basel)

Session format: Regular session

Archaeological heritage is currently affected by a large number of natural hazards that are a direct consequence of climate change: frequent extreme weather events, erosion, aridification, flooding, sea level rise, fires, the melting of permafrost, landslides, etc. and by a certain share of damages caused by human aggression or intervention. Climate change and its impacts on human societies has proved to be the cause of increased urbanisation processes and changes in land use and land cover, which will further develop in unprecedented population displacements in the next future. This is inevitably going to damage still uncover and unknown archaeological sites, affect existing exposed ones and generate new difficulties for the sustainable preservation of archaeological heritage at a scale we have not experienced before.

This session would like to gather different approaches to site vulnerability assessment, from remote sensing analysis, to site monitoring, including big-data and modelling practices developed within such a framework. The goal of the session is to discuss methodological challenges, the value of different scales of analyses and the difficulties in obtaining a full view of the multiple scales of hazards that can affect archaeological heritage today and in the future for a better and more strategic protection and research policy. Success stories of sustainable site protection measures after risk assessment are also much encouraged.

ABSTRACTS

1 THE CHERISH TOOLKIT: MONITORING AND UNDERSTAND THE IMPACTS OF CLIMATE CHANGE ON THE CULTURAL HERITAGE OF OUR SEAS AND COASTS

Abstract author(s): Shaw, Rob - Corns, Anthony - Pollard, Edward (The Discovery Programme) - Barker, Louise - Driver, Toby - Genders Boyd, Hannah (Royal Commission on the Ancient and Historical Monuments of Wales) - Davies, Sarah - Robson, Patrick (Department of Geography and Earth Sciences, Aberystwyth University) - Craven, Kieran (Techworks Marine)

Abstract format: Oral

The CHERISH climate change and coastal heritage project began in January 2017. Phase 1 of the project, which ran until June 2022, involved the survey and investigation of some of the most iconic coastal locations in Ireland and Wales. A variety of methods were employed by the CHERISH team to monitor and understand the past, present and near-future impacts of climate change on the rich cultural heritage of our seas and coasts.

This paper summarises the findings within the CHERISH Good Practice Guide which shares our experiences and practices by detailing the CHERISH 'toolkit' – the technologies and methods we employed. The guidelines focus on individual methods within our 'toolkit', and provide overview, analysis and evaluation across a standardised set of criteria covering aspects such as applicable environments, scale of coverage, resolution and accuracy, cost and outputs.

For each toolkit approach a case study showcases how the method was employed at a CHERISH study site. The CHERISH 'toolkit' represents an integrated and multidisciplinary approach; the individual methods were rarely used in isolation. We have therefore drawn together the analysis of individual methods as a visual overview for comparison to help guide users and decision making. Here, we also examine which are best employed to monitor weather and climate change impacts in the coast zone. In addition we showcase the integrated approach with our final set of case studies bringing the 'toolkit' together using the example of two study sites, Dinas Dinlle coastal hillfort in Wales and Ferriter's promontory fort in Ireland.

2 ASSESSING THE RISK OF THE ARCHAEOLOGICAL HERITAGE OF NORTHEASTERN AFRICA. A BAYESIAN NETWORK APPROACH

Abstract author(s): Laguna-Palma, David (Department of Prehistory and Archaeology, University of Granada) - Palacios, Olga (Laboratory of Quantitative Archaeology, Department of Prehistory, Autonomous University of Barcelona) - Mokránová, Katarína (Centre for Urban Networks Evolutions, Aarhus University)

Abstract format: Oral

Archaeological heritage in northeastern Africa is currently under anthropic and environmental processes causing a fast-paced disappearance of sites. Whilst the forces of change are visible (e.g., urban expansion, road building, agricultural intensification, socio-political conflicts, and climate change), their long-term consequences are poorly understood.

In this study we develop a predictive model assessing the probabilities of disappearance of archaeological heritage of the Marmarica region (NE-Libya/NW-Egypt), stretching from the Eastern Mediterranean coast to the inland oasis of Al-Jaghub and Siwa bordering the Libyan desert. Since there was not a prior reliable dataset of the archaeological sites located in this region, we have built a reliable dataset using satellite imagery and historical resources to locate them and, with paleoclimatic models to characterise their landscape conditions. With this data, we have built a predictive Bayesian network model quantifying the importance of the anthropic and environmental factors for the disappearance of the heritage and predicting the risk of some still preserved sites to be destroyed in the future.

Our model shows the potential to predict the degradation or the loss of archaeological heritage, by accounting for and predicting the destructive effects that human and natural phenomena have on archaeological sites. The model accounts for the threats to archaeological sites posed by climatic variability, increased precipitation, sea level rise, natural erosion, wind-weathering, agriculture, and urban development, with the possibility to account for additional anthropic and environmental variables through the use of a transparent and reusable script.

3 REMOTE SENSING SUPPORT IN THE AFTERMATH OF CLIMATE-RELATED IMPACTS ON ARCHAEOLOGICAL SITES: FLOODS, WILDFIRES AND EROSION

Abstract author(s): Marzban, Pouria (German Archaeological Institute - DAI - Scientific Computing Unit, Central Research Services; German Research Center for Geosciences - GFZ – Section 2.1, Physics of Earthquakes and Volcanoes) - Iacono, Elvira - Fritsch, Bernhard - Ducke, Benjamin (German Archaeological Institute - DAI - Scientific Computing Unit, Central Research Services)

Abstract format: Oral

Extreme climate events, which are set to occur at increasingly higher frequency, cause severe damage to cultural heritage sites. The German Archaeological Institute (Deutsches Archäologisches Institut; DAI), together with its partner organizations, has initiated the KulturGutRetter emergency framework (www.kulturgutretter.org) to assist with heritage disaster recovery around the globe. Our team's role is to provide cost-effective and rapid remote sensing support to damage assessment and planning on the ground. We provide recent case studies from Pakistan and Sicily, and discuss approaches to monitoring damage using remote sensing and GIS. In the case of Pakistan, we analyzed back-scatter changes in radar data from Sentinel-1 to compute flood extent. Five vulnerable sites were part of the assessed area, some of which were partly submerged and damaged in the event. We used Very High Resolution (VHR) satellite imagery to assess damage in more detail. In the case of Sicily, our focus was on the archaeological park of Selinunt on the south-western coast. Here, several wildfires had been reported, especially during Spring and Summer. We used Multispectral (MS) data from Sentinel-2 and applied the dNBR (difference Normalized Burn Ratio) to estimate the extents of burned areas. Again, we further evaluated the affected sites using VHR satellite imagery. In addition, we analyzed coastal erosion of nearby areas. In all cases, we used auxiliary GIS datasets from various sources to better understand the extents and areas of damages to sites. Our GIS-based desktop assessment was supported by aerial imagery, photogrammetric models, geological maps and archaeological plans, as well as field survey data, to provide local details. The result is a multi-source data package which can be used further for long term monitoring of sites or to help archaeologists to better understand and manage the situation locally.

4 PREDICTING SITES AT RISK DUE TO CLIMATE CHANGE: NEOLITHIC SITES IN THE NW MEDITERRANEAN AS A CASE STUDY

Abstract author(s): Morera Noguera, Núria (Universitat Autònoma de Barcelona; German Archaeological Institute) - Castiello, Maria Elena (Institute of Archaeological Sciences, University of Bern; Incipit-CSIC) - Antolín, Ferran (German Archaeological Institute; IPAS, University of Basel)

Abstract format: Oral

Archaeologists are more and more concerned about the risks menacing archaeological heritage due to climate change. It becomes urgent not only to protect sites that are already known but also to establish priorities to conduct systematic prospection work in areas suitable for past human occupation before it is too late. Since the systematic investigation of all areas at risk will not be possible, informed decisions will need to be made fast. One way of achieving informed decisions is to base them on rich datasets that allow to generate predictions on where new sites could most likely be located. Because this will be a time-dependent factor, both influenced by changing settlement patterns and past climate, these predictions will need to be temporarily constrained for a particular time slice in the past.

This paper will focus on the Neolithic period in NW Mediterranean area (from the Ebro to the Rhine rivers), an area where we have several thousands of radiocarbon dated sites between 5800 and 2300 BC. Based on this large dataset, a machine learning approach was used to predict settlement location in different time periods: 5900-5300, 5300-4500, 4500-3100, 3100-2300 BC. This paper will focus on the potential of these maps as a basis to predict areas with high-risk under climate change using GIS. For this purpose we will cross-analyse these predicted locations with existing models on climate-change derived processes (sea-level rise, land-slides, sea events, erosion and aridification) with the goal of identifying the most urgent areas to be investigated in the near future with a focus on the Neolithic period. The ultimate goal would be to generate similar models for different time periods and the many challenges of the approach would be a great basis for discussion in this session.

5 LARGE-SCALE ARCHAEOLOGICAL HERITAGE DOCUMENTATION AND THREAT ASSESSMENT IN THE INDUS RIVER BASIN: FROM THE TRANSNATIONAL TO THE LOCAL

Abstract author(s): Suganya, Kuili (University of Cambridge) - Besga, Iban (Catalan Institute of Classical Archaeology) - Jabbar, Junaid (University of Cambridge) - Gregorio de Souza, Jonas (Universitat Pompeu Fabra) - Khan, Afifa (University of Cambridge) - Orengo, Hector (Catalan Institute of Classical Archaeology; Catalan Institution for Research and Advanced Studies) - Roberts, Rebecca C - Tomaney, Jack - Vafadari, Azadeh - Petrie, Cameron A (University of Cambridge)

Abstract format: Oral

This paper presents the work of the ‘Mapping Archaeological Heritage in South Asia’ (MAHSA) project, which is creating an open access database of archaeological sites in the Indus River basin (Pakistan and northwest India). This is a tool for heritage management, threat monitoring, and public information in the face of threats from urban encroachment, agricultural expansion, and natural disasters. We highlight the process by which locations of archaeological significance are documented. We explore the factors which contribute to the preservation of an archaeological site, such as ascribed cultural significance. We also consider the factors that contribute to destruction, including infrastructure development, or uses and modification of archaeological mounds for agriculture or industry (for example, mining and brick kilns).

We outline the MAHSA project workflow, which is engaged in the documentation of archaeological settlement mound features across the Indus River basin and surrounding regions. Using historical maps, we identify potential archaeological mounds using manual methods and machine learning, the latter proving to be effective in extracting data on potential archaeological sites at scale. The detected mound data stands valid only with cross-verification from legacy data, satellite imagery, and, most importantly, ground-truthing in the field. Validation of hundreds of unknown (and known) archaeological mounds in the Indus River Basin and surrounding regions is being carried out through systematic data collection using Open Data Kit (ODK), a customized android based digital survey form.

The process of assessing archaeological significance becomes challenging when one starts observing structures (e.g., shrine, tomb, and cemetery) at these mound locations. We discuss: (a) the cultural significance of subtle, modern looking structures; and (b) ways of relating to the past as a place through markers, oral histories, customs, and rituals. Such considerations are important in the preparation of cultural protection measures and can likewise support sustainable infrastructure development policies.

6 CLIMATE CHANGE AND COASTAL ARCHAEOLOGY IN THE MIDDLE EAST AND NORTH AFRICA: MAPPING PAST DISTURBANCES AND ASSESSING FUTURE THREATS

Abstract author(s): Westley, Kieran (School of Geography & Environmental Sciences, Ulster University) - Andreou, Georgia (Archaeology, University of Southampton) - Nikolaus, Julia (School of Geography & Environmental Sciences, Ulster University)

Abstract format: Oral

Climate change is acknowledged as one of the key threats facing coastal archaeology today with particularly severe impacts coming from flooding and erosion. However, many places, such as multiple countries across the Middle East and North Africa (MENA) region, lack secure baseline data on the location and condition of archaeological sites, key threats and likely impacts on these sites. This presentation will outline ongoing research by the Maritime Endangered Archaeology (MarEA) project, which aims to document and assess threats to marine and coastal archaeological sites across MENA. Climate change-related work done by MarEA has been, to date, carried out at two scales of analysis. Firstly, regional-scale threat assessment which aims to summarize trends in threat and vulnerability across the region and over the coming century. Secondly, local- to site-scale studies which seek to provide detailed information on past disturbances and future threat at a scale appropriate for heritage management. In addition to estimating the likelihood of future threats, this research also highlights the complexity of change in the coastal and marine zone where both “natural” and “anthropogenic” forces interact to modify (sometimes exacerbating) the potential impact of climate change. An example of this is accelerated coastal erosion caused by illegal sand mining which, although unrelated to climate change, has the potential to locally enhance its destructive effects on coastal archaeological sites. Examples are presented from ongoing work in Libya and Oman. The overall intention of this presentation is to illustrate methods which could redress the frequent absence of baseline data on climate change impacts and coastal cultural heritage in the MENA region, and also provide information which can be used to refine projections of climate change impact in the near future.

7 AN ARCHAEOLOGICAL HERITAGE UNDER THREAT IN THE NADROGA-NAVOSA PROVINCE (VITI LEVU, FIJI): FIRST ASSESSMENT AND THE NEED FOR ACTION

Abstract author(s): Duval, Hervé (CReAAH - UMR 6566; Société Jersiaise) - Lancini, Loredana (CReAAH - UMR 6566, Le Mans Université) - Nunn, Patrick (University of the Sunshine Coast) - Compatangelo-Soussignan, Rita (CReAAH - UMR 6566)

Abstract format: Oral

The archaeological heritage of the Fiji Islands is subject to the consequences of climate change but also, and above all, to a strong anthropization, which results in a rapid and extensive urbanization process. Industries established for several decades have contributed to initiating this phenomenon by destroying or heavily impacting archaeological sites whose heritage value is particularly important to local populations. As a matter of fact, in this society where oral transmission is still very much alive, collective memory is of crucial importance for the understanding of sites closely related to ancestors and the development of modern villages. In fact, the destruction of this heritage, whatever the cause, constitutes an unprecedented loss for the locals and an archaeological challenge of primary importance.

This paper proposes to provide an assessment based on the results of the 'Environmental Changes and Heritage in Atlantic and Pacific Hillforts' project, the aim of which was to carry out surveys on lost sites whose location was known by local populations and shared through their oral traditions. A presentation of several sites makes it possible to report on the situation in the province of Nadroga-Navosa and the discussion proposes to extend to coastal sites threatened by very active erosion. After this general observation, solutions are proposed to protect this threatened heritage. Over time, the Fiji population has had to adapt their living spaces to the rhythm of climate change and today this topic is like a mirror in which the archaeologist can decide to be either an observer or an actor (activist?).

8 MOVING OBJECTS INTO THE MOUNTAIN: A SOLUTION TO A GROWING CRISIS

Abstract author(s): Vinje-Christensen, Sigrid - Espedal, Mette (University Museum of Bergen)

Abstract format: Oral

Archaeological collections can be subject to numerous hazards if stored in unsuited and dated storage facilities. An example of this can be seen at Bryggens Museum, located in Bergen, Norway, where the archaeological collections face several threats connected to climate change and human impact.

The storage at Bryggens Museum was built in 1976 and was at the time a modern and up to date storage facility. However, over the years technology and knowledge of storing objects has advanced and the facilities are no longer fit for purpose. The collections are stored in the museum basement, located below sea level. With the museum situated close to the harbour, just under 100m from the sea, climate change, causing the sea level to rise, will ultimately lead to flooding, and the entire collection of approximately 650.000 objects could be compromised.

With unstable and humid conditions outside, it is important that the storage secures stable relative humidity conditions. However, the climate control system has malfunctioned on several occasions, as well as the water pipes that run in the ceiling have had leakages in the past, further increasing the relative humidity in the storage. This combination has previously led to several mould outbreaks, and despite a mould sanitation project to solve the issue, mouldy objects continue to be discovered.

The collection consists of several material groups, including leather, metal, and glass, and thus calls for different storage conditions. Unfortunately, this is not possible in the existing storage in the basement of the museum. The solution to all these hazards is a new purpose-built storage, inside a mountain hall, where the emphasis has been placed on long-term storage and sustainability.

A. MONITORING THE NATIONAL ARCHAEOLOGICAL RESERVE. ASSESSING THE PHYSICAL CONDITION OF MORE THAN 4000 SITES

Abstract author(s): Os, Bertil - Bouwmeester, Jeroen - Eerden, Monique - Mauro, Guido (Rijksdienst voor het cultureel erfgoed)

Abstract format: Poster

One of the tasks of the Dutch Cultural Heritage Agency is to protect cultural heritage so that future generations can learn about, enjoy and connect with their common ancestry. To protect archaeological sites from developments and to ensure that the information they contain is preserved in the event of a threat, the Dutch government has listed some 1460 archaeological monuments, comprising more than 4000 individual sites. But what is the current state of these sites?

To answer this question, the agency set up a monitoring program. The monitoring program had two main objectives:

- to assess the physical condition of all monuments in order to estimate the resources needed for restoration and conservation where necessary;

- to involve and inform landowners, particularly private landowners, in the maintenance and conservation of the sites.

The monitoring scheme consisted of a visual inspection and a probing plan to assess the integrity of the ground and the conservation potential. Conservation potential was estimated by proxy using parameters such as redox boundary depth, carbonate availability and lithology. In order to involve the landowners, a passport was developed for each monument. This passport included information on the location, boundaries and archaeological information (period, type) and was offered together with a monument shield.

It took twelve teams of two archaeologists about two years to complete the monitoring work. A further year and a half was needed for data processing and reporting.

In this presentation we will introduce the method and report on the physical status of the archaeological monuments in the Netherlands, the most important threats and remedial solutions, as well as some examples of passports.

141 IRON AGE BIO CULTURAL DYNAMICS IN CONTINENTAL EUROPE AND BRITAIN: PATTERNS AND PROCESSES FROM A MULTIDISCIPLINARY PERSPECTIVE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Milella, Marco (Institute of Forensic Medicine - Department of Physical Anthropology - University of Bern) - Zink, Albert (Eurac Research - Institute for Mummy Studies) - Armit, Ian (University of York) - Laffranchi, Zita (Institute of Forensic Medicine - Department of Physical Anthropology - University of Bern) - Zingale, Stefania (Eurac Research - Institute for Mummy Studies)

Session format: Regular session

The Iron Age is a time of great interest from a biological and cultural perspective in both Britain and continental Europe. The geographic and chronological heterogeneity of this period, however, calls for the application of multidisciplinary research approaches, able to evaluate and compare observed biological and sociocultural patterns. Inspiration for this session are two recently funded multidisciplinary research projects on Iron Age biocultural dynamics (CELTUDALPS and COMMIOS). The session seeks to bring together contributions from a wide range of specialists involved in the bioarchaeological, isotopic, and paleogenetic investigations of Western European and British Iron Age contexts. The main aim is to provide a platform for scientific exchanges between different experts and promote a multidisciplinary discussion of a range of topics including (but not necessarily limited to) Iron Age social differentiation, diet, mobility, population dynamics, family relationships, and their biological and cultural correlates. The session will also be an ideal platform for sharing and discussing updates and results of the CELTUDALPS and COMMIOS projects.

ABSTRACTS

1 THE CELTUDALPS PROJECT: A MULTIFACETED PERSPECTIVE ON LATE IRON AGE TERRITORIAL MOBILITY AND GENETIC VARIATION IN NORTHERN ITALY AND SWITZERLAND

Abstract author(s): Milella, Marco - Laffranchi, Zita (Department of Physical Anthropology - Institute of Forensic Medicine - University of Bern) - Stefania, Zingale (Institute for Mummy Studies, Eurac Research, Bolzano) - Löscher, Sandra - Arenz, Gabriele (Department of Physical Anthropology - Institute of Forensic Medicine - University of Bern) - Coia, Valentina - Paladin, Alice - Zink, Albert (Institute for Mummy Studies, Eurac Research, Bolzano)

Abstract format: Oral

The steady increase of biogeochemical and biomolecular data is refining traditional anthropological and archaeological hypotheses about the genetic history and territorial mobility patterns of European human groups during the Late Iron Age. Compared with other geographic areas, however, only few data are yet available for those “Celtic” groups occupying the Northern Italian and Swiss territories during this period. Even fewer are collaborative research projects trying to compare these different types of information for these geographic areas. The resulting knowledge gap is especially relevant given the archaeologically and historically documented networks (cultural, commercial, and migratory) between the two sides of the Alps in this period.

With CELTUDALPS we aim to address these issues by means of a multidisciplinary analysis of a large (ca. 300) individuals representing La Tène cultural groups inhabiting modern Switzerland and Northern Italy between the 4th -1st centuries BCE. By applying a range of methods including the analysis of ancient DNA and isotopic ($\delta^{15}\text{N}$, $\delta^{13}\text{C}$, $\delta^{34}\text{S}$, $\delta^{18}\text{O}$, $87\text{Sr}/86\text{Sr}$) data, and the quantitative analysis of funerary patterns, CELTUDALPS aims to: (a) estimate the differences and similarities in territorial mobility between these groups; (b) reconstruct their genetic history and variation; (c) explore the possible links between mobility, kinship patterns, and social organization in each area. Here, we present the theoretical background and research design of the project, illustrate the state of the art of the project with examples selected from our most recent results, and discuss the planned next steps of our research.

2 „CELTS“ UP & DOWN THE ALPS. NEW ISOTOPIC INSIGHTS ON MOBILITY IN PRE-ROMAN VERONA (NE ITALY, 3RD -1ST C. BCE)

Abstract author(s): Laffranchi, Zita (Department of Physical Anthropology, Institute of Forensic Medicine, University of Bern) - Zingale, Stefania (Institute for Mummy Studies, Eurac Research, Bolzano) - Salazar García, Domingo (Departament de Prehistòria, Arqueologia i Història Antiga, Universitat de València; Department of Geological Sciences, University of Cape Town) - Lösch, Sandra - Arenz, Gabriele (Department of Physical Anthropology, Institute of Forensic Medicine, University of Bern) - Coia, Valentina - Paladin, Alice (Institute for Mummy Studies, Eurac Research, Bolzano) - Salzani, Luciano (Soprintendenza Archeologia, Belle Arti e Paesaggio per le province di Verona, Rovigo e Vicenza) - Zink, Albert (Institute for Mummy Studies, Eurac Research, Bolzano) - Milella, Marco (Department of Physical Anthropology, Institute of Forensic Medicine, University of Bern)

Abstract format: Oral

The European Late Iron Age (4th -1st centuries BCE) features intense trade networks and movements of people. The settling in the Italian peninsula of transalpine human groups exemplifies the dynamism of this period. Preliminary isotopic data ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$ and $\delta^{18}\text{O}$) from a subset (N=49) of individuals from Seminario Vescovile (SV-Verona, Italy 3rd -1st c. BCE) highlighted few nonlocals in this pre-Roman necropolis. Here, we expand our previous analyses of SV, by means of a larger sample (N=127, i.e., ca. 70% of buried individuals) and the inclusion of additional isotopic ratios, in order to provide a more solid estimate of territorial mobility, and of the possible links in this community between provenance, sex, and funerary treatment. To this aim we analyzed the isotopic ratios of sulfur ($\delta^{34}\text{S}$; N=127 - 61 adults and 66 nonadults) and strontium ($^{87}\text{Sr}/^{86}\text{Sr}$; N=57: 51 adults and 6 nonadults) from respectively bone collagen and dental enamel. We used as proxy of locally bioavailable $\delta^{34}\text{S}$ and $^{87}\text{Sr}/^{86}\text{Sr}$ ranges two standard deviations from the isotopic mean of archaeological faunal remains and modern plants, and checked for individuals falling outside this range. We then explored differences between sexes and funerary features in $\delta^{34}\text{S}$ and $^{87}\text{Sr}/^{86}\text{Sr}$ by means of Mann-Whitney tests. Human $\delta^{34}\text{S}$ and $^{87}\text{Sr}/^{86}\text{Sr}$ ratios average $5.7 \pm 1.7\text{‰}$ V-CDT and 0.709756 ± 0.001430 respectively. Minimum estimates of nonlocals range from 3 (2.5%) for $\delta^{34}\text{S}$, to 8 (14%) based on $^{87}\text{Sr}/^{86}\text{Sr}$. At least in two cases, these show isotopic values suggesting an alpine/transalpine origin. Isotopic data do not show an association with individual sex or funerary treatment. These new results call for a revision of previous estimates of mobility at SV, and supports a link between this human group and both alpine and transalpine contexts.

3 GENETIC HISTORY OF LATE IRON AGE (4TH - 1ST CENTURY BCE) HUMAN GROUPS FROM BOTH SIDES OF THE ALPS

Abstract author(s): Zingale, Stefania (Institute for Mummy Studies, Eurac Research, Bolzano) - Laffranchi, Zita (Department of Physical Anthropology, Institute of Forensic Medicine, University of Bern) - Paladin, Alice (Institute for Mummy Studies, Eurac Research, Bolzano) - Lösch, Sandra (Department of Physical Anthropology, Institute of Forensic Medicine, University of Bern) - Dori, Irene (Soprintendenza Archeologia, Belle Arti e Paesaggio per le province di Verona, Rovigo e Vicenza; Department of Biology, University of Florence) - Müller, Felix (Bernisches Historisches Museum, Bern) - Kaeser, Marc-Antoine (Laténium, parc et musée d'archéologie, Neuchâtel) - Coia, Valentina (Institute for Mummy Studies, Eurac Research, Bolzano) - Milella, Marco (Department of Physical Anthropology, Institute of Forensic Medicine, University of Bern) - Zink, Albert (Institute for Mummy Studies, Eurac Research, Bolzano)

Abstract format: Oral

During the Late Iron Age (La Tène, 4th-1st centuries BCE), various human groups sharing cultural elements, commonly referred to as “Celts”, were involved in migration processes and settled in the Italian Peninsula after crossing the Alps. The current knowledge of these people is largely drawn from osteological, isotopic, archaeological, and historical evidence. However, the genetic history of these groups from both north and south of the Alps remains unexplored.

This paleogenomic study aims to analyze if the cultural similarity of these people is reflected in their genomic makeup. Moreover, it intends to study the genetic relationships between different La Tène groups from north and south of the Alps, and other ancient and present-day populations from Europe.

We performed molecular analyses (shotgun and nuclear capture data – approx. 1.3 mio SNPs) on 194 individuals from 13 Swiss and North Italian Late Iron Age archaeological contexts. Ancient DNA data allows to determine the genetic sex in 119 individuals, comprising 76 XX and 43 XY, including 52 subadults. With the additional support of mitochondrial DNA data, we detected genetic relatedness among three individual pairs within two different Swiss archaeological sites, and one case in the North-Italian site of Seminario Vescovile.

Comparative analyses show a genetic similarity between the ancient Swiss and Italian individuals. Additionally, their genomic diversity overlaps with that of especially western and south-western European present-day populations. However, the results suggest a genetic discontinuity between Late Iron Age individuals from Northern Italy and present-day populations from the same geographic area. On the other hand, the comparison with published data infers a stronger genetic affinity among European Iron Age groups.

4 NEW INSIGHTS ON CELTIC MIGRATION IN ITALY AND HUNGARY THROUGH THE ANALYSIS OF NON-METRIC DENTAL TRAITS

Abstract author(s): Piccirilli, Erica (Department of Cultural Heritage, University of Bologna) - Sorrentino, Rita (Department of Biological and Geological Sciences-BiGeA, University of Bologna) - Lugli, Federico (Department of Chemical and Geological Sciences, University of Modena and Reggio Emilia; Department of Cultural Heritage, University of Bologna) - Bortolini, Eugenio (Department of Cultural Heritage, University of Bologna; Department of Archaeology and Anthropology, IMF-CSIC - Spanish National Research Centre) - Silvestrini, Sara (Department of Cultural Heritage, University of Bologna) - Cavazzuti, Claudio (Department of History and Cultures, University of Bologna) - Gottarelli, Antonio (Department of History and Cultures, University of Bologna) - Belcastro, Maria Giovanna (Department of Biological and Geological Sciences-BiGeA, University of Bologna) - Hajdu, Tamás (Department of Biological Anthropology, Faculty of Science, Institute of Biology, Eötvös Loránd University) - Benazzi, Stefano (Department of Cultural Heritage, University of Bologna)

Abstract format: Oral

Non-metric dental traits were used to evaluate the biological relationships among Iron Age contexts attesting the Celtic presence in Hungary (Sopron-Krautacker and Pilismarót-Basaharc), continental and non-continental Europe (Hallstatt, Munsingen-Rain, Yorkshire), and northern Italy (Monte Bibele and Monterenzio Vecchio for which strontium isotopes were analysed to identify likely Etruscans and Celts). Biological distances among Celts and Scythians (Tápiószele) from Hungary, 13 Iron Age central-southern Italic sites, and an Italian Bronze Age necropolis (Scalvinetto) were also investigated.

Dental morphology outlined the divergence between Celts and the Italian autochthonous samples, plus a significant biological closeness of Hungarian and Italian Celts, supporting historical records mentioning a common origin for Celts migrated eastwards and southwards, and attested by several recent studies on Celtic migration.

A strong local background concerns all the autochthonous Italian samples, where the northern Italian Bronze and Iron Age local communities (Scalvinetto, Monte Bibele and Monterenzio Vecchio locals) share a branch, suggesting the existence of migratory routes in Bronze and Iron Age northern Italy.

Interestingly, a Scythian-related background emerges both in Celts from Hungary and Italy, suggesting that they could share a similar non-Celtic ancestry from the Steppe, the original Scythian homeland. In line with recent genetic studies, we might suggest that both Iron Age Celts from Hungary and Italy could have inherited a “Steppe-related ancestry”, coming from a westward flow of Bronze Age Steppe populations, probably arrived in the Carpathian Basin during Bronze Age and genetically influencing the local Iron Age descendants. Since supported by the lack of Scythian-related background in Celts from core and western sites, we propose the existence of a westward migratory route bringing people from the Carpathian Basin to Italy, here establishing an intake of eastern genes then merged with the rearrangement of biological variability in Europe due to Iron Age Celtic migration.

5 IRON AGE COMMUNITIES IN CENTRAL EUROPE: INVESTIGATING SOCIOCULTURAL CHANGES BY COMBINED BIOARCHAEOLOGICAL AND MATERIAL EVIDENCE (“ELEMENTS”)

Abstract author(s): Danielisova, Alzbeta - Bursák, Daniel (Institute of Archaeology of the Czech Academy of Sciences, Prague)

Abstract format: Oral

The socio-cultural image of Europe in the Iron Age is traditionally assumed to be a result of interaction between the indigenous substrates and external cultural inputs caused by ‘migrations of foreign cultural components’. In central Europe, the Danube served as the primary communication corridor through which the long-distance impulses connected the Mediterranean to the areas north of the Alps and West to the East. During the early and middle La Tène period (5th – 4th cent. BC), a rapid spread of material culture, influenced by the Middle Rhine, the Swiss plateau, and Bohemian lowland regions, reached the territories that became to be further known as the ‘La Tène Europe’. During the 3rd – 2nd cent. BC we see this direction somewhat reversed with major influences coming from the Mediterranean connecting the areas north of the Alps. Such ‘impulses’ have caused profound changes in La Tène society, affecting the organisation of settlements, local dietary patterns, specialised technologies, and finally also burial customs. Our project ‘ELEMENTS’ is aimed at investigating whether these transformations were induced externally, by the new incoming groups disrupting the traditional continuity of the local communities, or whether these notable changes were more coherent with the endogenous development of the local people, processing the inputs mediated by increasing long-distance contacts. We aim to test the theory of whether spreading and adopting new ways of life connected with economic innovations resulted also in the adoption of common cultural or ideological models that facilitated communication and created social links between individual groups that did not need permanent relocation of people to be put in practice. We employ an interdisciplinary approach based on a combination of the structural analyses of local cemeteries (demography, kinship, mobility, diets) with technological and provenance analyses of costumes and personal objects.

6 COMPREHENSIVE STUDY OF THE GALLIC SITE OF THÉZY-GLIMONT USING STABLE ISOTOPE SYSTEMATICS OF BODY REMAINS

Abstract author(s): Clauzel, Thibault (Univ Lyon, Univ Lyon 1, ENSL, CNRS, LGL-TPE, F-69622) - Richardin, Pascale (Centre de Recherche et de Restauration des Musées de France C2RMF, Palais du Louvre, Porte des Lions; TEMPS–Technologie et Ethnologie des Mondes PréhistoriqueS, CNRS UMR8068, Université Paris 1 Panthéon Sorbonne & Paris Nanterre) - Fourel, François (Univ Lyon, Université Claude Bernard Lyon 1, CNRS, ENTPE, UMR 5023 LEHNA, F-69622) - Flandrois, Jean-Pierre (Université de Lyon, CNRS, UMR 5558, Laboratoire de Biométrie et Biologie Evolutive) - Lécuyer, Christophe (Univ Lyon, Univ Lyon 1, ENSL, CNRS, LGL-TPE, F-69622; also at Institut Universitaire de France)

Abstract format: Oral

Gallic populations occupied most of Western Europe during the late Iron Age. They are increasingly studied as they experienced major variations at the climatic and political scale. However, knowledge about their cultural legacy is scarce, due to a predominantly oral transmission of culture and traditions and the lack of written sources. Thézy-Glimont, in Northern France, is an archaeological site which was excavated in 2013 in the context of rescue archaeology. These works highlighted a total of 17 rectangular graves containing human and animal remains aligned along rows and dating between the third and second century BCE. The careful deposition of humans and animals, intentionally aligned in each grave, led to the interpretation of these finds as “offering graves”. An open question relates to the geographic origin and social status of the buried individuals. The analysis of stable isotopes from bone and dental remains of humans and animals from the site may offer insights about these aspects. Oxygen isotope data of bioapatite phosphate groups show they experienced mean air temperatures of approximately 10°C, which is comparable to present day temperatures in the region. This result accords with paleoclimatic studies suggesting a warm episode in Europe during the late Iron Age. Stable isotopes of carbon and nitrogen from bone collagen highlight for humans a mixed diet based on C3-plants and a minor contribution of meat from cattle. Additionally, three human skeletons were incrementally sampled to study intra-individual variability in stable isotope values. Results suggest that the individuals had a consistent lifestyle and were probably locals. Hypotheses are discussed regarding the social status of these individuals and the ritual practices associated with their burial. This study illustrates how a comprehensive understanding of archaeological contexts and of the interaction between individuals and their physical environment can be achieved using stable isotope analysis.

7 UNEARTHING THE DEAD IN THE LONG IRON AGE OF SCOTLAND: LARGE-SCALE DATA ANALYSIS OF POST-MORTEM TREATMENT FROM 1300BC – AD1000

Abstract author(s): Legge, Michael (University of York)

Abstract format: Oral

The COMMIOS project represents a unique opportunity to conduct the largest, most wide-ranging analysis of Iron Age funerary treatment in Britain thus far. The multidisciplinary nature of the project allows for the integration of biomolecular data (human osteology, isotope analysis and ancient DNA) and robust archaeological frameworks. Underlying more site-specific analyses is a relational database synthesising Iron Age human remains across mainland Britain, taking an holistic approach to the mortuary record, including inhumations and cremations, bone bundles and disarticulated remains.

Scotland adopts the Long Iron Age chronology which encompasses, in its latter stages, the spread of Christianity, and ends with Viking incursions c.AD 800-1000. The Roman presence was intermittent and limited to southern Scotland; even there, Iron Age communities remained relatively unaffected by the Romanisation that occurred elsewhere in Britain. This unique (pre-)history, the continuation of the Iron Age for hundreds of years beyond AD43, creates an opportunity for a significant time transect approach to funerary data, while providing a valuable comparative assemblage for studying other regions.

This paper presents the results of the COMMIOS database for Scotland, illustrating the wealth of data that is available for study, the value of large-scale analysis in understanding chronological and geographic shifts, and the ways in which traditional archaeological data can be interwoven with the scientific approaches of aDNA, isotope analysis and human osteology. Patterns in post-mortem treatment are explored, from depositional context, to skeletal position, to burial accompaniments. Evidence for post-mortem skeletal manipulation, complex funerary processes, and the meaning of the dead, are discussed on a local and regional scale.

8 LIFE AND DEATH IN IRON AGE WALES: RESULTS FROM RADIOCARBON DATING, HISTOLOGICAL AND STABLE ISOTOPE ANALYSES FROM CASE-STUDY SITES

Abstract author(s): Bricking, Adelle (Amgueddfa Cymru/National Museum Wales; Cardiff University) - Davis, Oliver - Madgwick, Richard (Cardiff University)

Abstract format: Oral

The study of human remains provides us with our most direct window onto the Iron Age population in Wales. However, burial evidence from Wales has been understudied compared to areas such as Yorkshire and Wiltshire. This is due in part to poor preservation as acidic soils destroy much of the osteological material—for example, Rowan Whimster (1981) identified only eight records of Iron Age burial in the whole country. This led to the popular assumption that the lack of human bone means that the majority of burial rites were “archaeologically invisible”, particularly excarnation within hillforts. However, a more recent reappraisal of the published and unpublished literature on excavations of Iron Age sites by Oliver Davis (2017) has shown that the corpus of burial material in Wales is much larger than previously recognised. This provides an opportunity to assess funerary rites and treatment of the dead, mortality profiles, health, diets and origins of the Iron Age population in Wales.

This paper presents the results of recent radiocarbon, histological and isotope analysis from two sites with the largest assemblages – RAF St Athan in the Vale of Glamorgan and Dinorben in Conwy. By combining contextual study of this material with isotopic and micro taphonomic analysis, the aim of the project is to directly address how we understand mortuary practices, but also to reveal new insights into life through diet and origins of later prehistoric populations in Wales.

9 THE ROMANS ARE COMING! INVESTIGATING TEMPORAL LIFESTYLE CHANGES THROUGH MULTI-ISOTOPE ANALYSIS OF IRON AGE AND ROMANO-BRITISH INDIVIDUALS FROM YORKSHIRE (UK)

Abstract author(s): Robert, Prudence (Department of Archaeology, University of Durham; Isotope Bioscience Laboratory - ISOFYS, Ghent University; Department of Archaeology, Ghent University) - Liscakova, Katarina (Department of Archaeology, University of Durham) - Gröcke, Darren (Stable Isotope Biogeochemistry Laboratory - SIBL, Department of Earth Sciences, Durham University) - Nowell, Geoffrey (Department of Earth Sciences, Durham University) - Loeffelmann, Tessi (Department of Archaeology, University of Durham; Department of Chemistry, Research Unit: Analytical, Environmental & Geo-Chemistry, Vrije Universiteit Brussel, AMGC-WE-VUB) - Kancle, Lauren - Caffell, Anwen - Swann, Natalie - Moore, Joanna - Montgomery, Janet (Department of Archaeology, University of Durham)

Abstract format: Oral

Excavations at Yapham Lane, East Yorkshire, revealed a rural settlement with remains of skeletons dating back to the Late Iron Age and the Romano-British periods. A multi-isotope analysis of seven adults and two subadults was conducted to shed light on this population's diet, health, mobility, and origins.

The results of the incremental dentine collagen carbon and nitrogen isotope analysis and bulk rib carbon and nitrogen isotope analysis suggest that the Iron Age individuals heavily relied on terrestrial animal protein throughout their lives. The Romano-British individuals, however, show more dietary variation, and some may even have consumed marine resources. This is consistent with the introduction of various new foodstuffs following the Romanisation of Britain. Irrespective of the time period, this population appears to have suffered from nutritional or physiological stress during their childhood, as indicated by their carbon and nitrogen isotope incremental profiles and the presence of non-specific stress indicators on their skeletons.

Strontium, lead radiogenic, and stable oxygen isotope compositions were determined using enamel from the canines of eight of the individuals. Results suggest that the group was predominantly local and sedentary. However, whilst the Late Iron Age individuals have isotope compositions that are consistent with the local geology and climate, the Romano-British individuals appear to have had more diverse origins, consistent with evidence from other sites. Three Roman individuals provided oxygen, strontium and/or lead isotope compositions which fall outside the range expected for Yorkshire and most other areas of Britain. Two of them provide carbon and nitrogen isotope compositions that corroborate these results: they may have changed dietary habits between childhood and adulthood.

The multi-isotope analysis of these individuals offered a unique insight into the lifestyle changes experienced by a rural population of East Yorkshire following the transition from the Iron Age to the Roman period.

10

BURIED WHOLE, IN HALF, IN FRAGMENTS: BIOMOLECULAR, OSTEOLOGICAL AND FUNERARY APPROACHES TO THE HUMAN REMAINS FROM DANEBURY IRON AGE HILLFORT

Abstract author(s): Bleasdale, Madeleine - Fischer, Claire-Elise - Castells Navarro, Laura (University of York) - Büster, Lindsey (University of York; Canterbury Christ Church University) - Primeau, Charlotte (University of Warwick) - Reich, David (Harvard University) - Hamilton, Derek (Scottish Universities Environmental Research Centre - SUERC) - Evans, Jane (British Geological Survey - BGS) - Armit, Ian (University of York)

Abstract format: Oral

Danebury Hillfort (c.550 - c.100 BC) is one of the best known Iron Age sites in Britain. Excavations between 1969 and 1988 were carried out by a team led by Barry Cunliffe (Cunliffe 1995), and the site has formed the basis for much discussion on the scale and nature of British Iron Age society. Approximately 300 deposits of human remains (e.g. pit burials, partially articulated remains, isolated skulls) were recovered during excavations; however, relatively little is known about the buried community, their relations and provenance. The complexity that characterises this site requires a multidisciplinary approach, including synthesis of the extensive archaeological data combined with the osteological analysis of the human remains, AMS-dating and biomolecular data to investigate social dynamics as well as geographical mobility.

91 individuals have been sampled for aDNA whole-genome capture analysis, of which 41 have also been analysed using a multi-isotope (Sr-Pb-O-C) approach. Preliminary results suggest good DNA preservation allowing testing for biological relatedness, as well as genetic diversity. Previous isotope results of animals from Danebury show significant levels of mobility at the site and surrounding area (Hamilton et al. 2019). These data have been used as a proxy for human mobility to successfully challenge previous concepts of Iron Age communities having led relatively sedentary lives. By analysing human teeth using mobility isotopes (primarily strontium and lead) for the first time, this paper provides direct isotopic insights into childhood residential origins for the Danebury community. Eventually, this work will be embedded in the wider Hampshire Iron Age landscape, including comparisons with Suddern Farm and Viabes Farm.

11

'TIL DEATH DO US PART: EXPLORING THE BIOLOGICAL RELATEDNESS OF DOUBLE BURIALS IN IRON AGE EUROPE

Abstract author(s): Büster, Lindsey (University of York; Canterbury Christ Church University)

Abstract format: Oral

Advances in ancient DNA analysis have revolutionised our ability to study the relationship between biological relatedness and socially constructed kin. Using data from the COMMIOS Project, this paper will explore the potential of ancient DNA evidence to shed light on the phenomenon of double burials. Genetic data have already confirmed the biological relatedness of individuals in so-called 'mass graves', which suggest a single, often violent, mortuary event followed by quick (and likely unceremonious) 'disposal'. Double burials, however, so often cited in the literature, pose different challenges in their interpretation. Who were these individuals and how is it that they were interred in a single grave? Was their burial governed by tempo: by which any individual(s) who died around the same time shared a grave (and associated funerary rites)? Or do these graves represent designated family plots, necessitating either the re-opening of existing graves or the curation of one or more bodies before final deposition? Only a truly multidisciplinary approach which includes osteological, taphonomic, histological, archaeoanthatological and now ancient DNA evidence can move us closer to unpicking the complex stories of Iron Age life and death.

12

LIFE WITH AN ARROW IN THE SKULL: A SCYTHIAN WARRIOR AT THE NORTHERN BLACK SEA REGION CROSSROADS

Abstract author(s): Potekhina, Inna (Institute of Archaeology of the National Academy of Sciences of Ukraine) - Nykonenko, Dmytro (National Reserve Khortytsia)

Abstract format: Oral

During the Early Iron Age, the Northern Black Sea region was a unique contact zone between nomads, constantly moving along the Great Steppe following the sun, and Greek navigators, who expanded the borders of the ecumene and settled local sea coasts. The warlike tribes of the Scythians created a state entity on this territory, leaving behind the most vivid trace.

Combat injuries, as a manifestation of the military character of Scythian regular life, are recorded in human remains. Most often the wounds were inflicted by arrows. However, recorded cases of an arrow injury to the skull are rare. A Scythian warrior who survived such injury, and maybe fought many battles after, is unique. The skeleton of the 40-45 years old male comes from the burial of the 4th century BCE at the "Kanfarka" cemetery. The man belongs to the local sharply dolichocranic and broad faced Caucasoid group. He was wounded in the parietal bone, the arrowhead

was broken off, and only its fragment point remained in the skull. The latter did not damage the brain but caused a small subdural hematoma. Despite the possible neurological problems caused by trauma to the skull, the warrior did not stop his physical activity. This is evidenced by traces of later injuries and pathologies on his skeleton.

The cemetery is located on Khortytsia — the largest island of the Dnipro River. The peculiarities of the burial construction, custom, and burial place give the case uniqueness. The island was one of the few places of convenient crossing between the banks of Dnipro, it was located at the end of the waterway that connected the deep steppe regions with the Black Sea and the Greek colonies. It was situated at busy crossroads of trade and nomadic routes and had significant strategic importance.

13 DINING IN TUVA: DIET AND MOBILITY IN A LATE IRON AGE AGRO PASTORAL COMMUNITY OF SOUTHERN SIBERIA (2ND-4TH C. CE)

Abstract author(s): Caspari, Gino (University of Bern; University of Sydney) - Milella, Marco - Laffranchi, Zita - Arenz, Gabriele (University of Bern) - Sadykov, Timur (-) - Blochin, Jegor (-) - Keller, Marcel (University of Bern; University of Tartu) - Kapinus, Yulia (-) - Lösch, Sandra (University of Bern)

Abstract format: Oral

The traditional concept of „nomadic“ cultures as mobile and economically simple is nowadays increasingly displaced by more nuanced interpretations. Much of the scientific literature on diet and mobility of Eurasian pastoralist populations focuses on the Bronze Age and Early Iron Age. As a result, the relative underrepresentation in these analyses of more recent contexts hampers a full discussion of possible chronological trajectories. This study explores diet, mobility, and their social correlates at Tunnug1 (Republic of Tuva, 2nd-4th centuries CE) on a set of 65 humans and 12 animals by means of a combined analysis of stable isotopes of carbon, nitrogen and sulfur ($\delta^{13}C$, $\delta^{15}N$, $\delta^{34}S$) from bone collagen and their comparison with the available anthropological, archaeological, and archaeothanatological evidence from the site. Demographic and isotopic patterns were compared using nonparametric tests and Bayesian models. Finally, isotopic data were compared with evidence of intentional perimortem skeletal injuries and funerary features. The results suggest that: 1) diet in Tunnug1 was mainly based on C4 plants (probably millet) and animal proteins; 2) a few individuals were nonlocals, although their geographical origin remains unclear; 3) there are no differences in diet according to sex or funerary treatment. On the other hand, individuals with perimortem lesions show isotopic values suggestive of a lower consumption of millet and animal proteins. This study provides new data on the sociocultural variability of the agro pastoral societies of southern Siberia during the late Iron Age, and supports the economic relevance of millet for these communities.

143 DEFINING SITE FUNCTIONS IN THE VIKING WORLD: WEAVING NARRATIVES FROM DISPARATE STRANDS OF EVIDENCE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Russell, Ian (Institute of Irish Studies, University of Liverpool) - Mytum, Harold (Archaeology, Classics & Egyptology, School of Histories, Languages and Cultures, University of Liverpool) - Boyd, Rebecca (Irish Archaeological Consultancy)

Session format: Regular session

The roles of many Viking-Age sites are often difficult to determine, even when they contain clear archaeological signatures like structures, working areas, or burials. Viking-Age archaeologists weave their interpretations using a variety of different sources and evidence - archaeology, history, placenames, artistic styles, linguistics. Archaeologists are inhibited by limited excavation trenches or artefact survival, while historians face the limits of the archives. Despite these constraints, we tout certainty in our identification of a site as a Viking-Age one based on combining multiple strands of evidence.

Much of this confidence comes from earlier tendencies to classify and categorise sites as one thing or another, a winter camp, burial site, Type 1 house or Petersen Type sword. Yet, Gero (2007) and Joyce (2006) emphasises the potential of ambiguity and the creative way we construct narratives in archaeology. Ambiguity can be a positive interpretive force, but it is one that is rarely seen in Viking-Age interpretations.

In this session, we invite papers which explore the methods and processes of interpreting datasets whilst considering questions of ambiguity and reinterpretation. We take the parameters set by Sindbaek and Lund (2021) to define the Viking Age. This is not an ethnic definition but materially defined ways of living AD 750/800 - 1050 within Scandinavia and northern Germany, the diaspora of eastern and western Europe, and the North Atlantic islands and Newfoundland. We welcome fluid and alternative narratives, and more critical dissection of the combination of analytical and creative skills that we apply within Viking-Age archaeology.

1 SIGHT, SOUNDS AND SENSES: DEFINING THE FUNCTION OF VIKING CAMPS FROM DISPARATE STRANDS OF EVIDENCE

Abstract author(s): Russell, Ian (Institute of Irish Studies, University of Liverpool)

Abstract format: Oral

The historical sources contain many records of Viking overwintering camps or of raiding or some form of aggressive military activity and its become almost engrained into our belief that these camps were mainly temporary in nature and usually always militaristic in function and form. We know where many of these camps were but what did they actually look and sound like ?

Yes, the camps had a military function and the finding of ships nails and weapons are testament to that, and yet the evidence from Woodstown of ship repair hints at an activity that requires iron working, iron smelting and carpentry. Evidence of lead, silver, glass and iron working and even spinning and weaving demonstrates craft or manufacturing activities; stone tools at the finishing of blades; lead weights and silver of a trading economy. Analysis of animal bone indicates the presence of cows, sheep, goats and horse which must have been corralled within a field system at least of similar size as the camp itself for grazing or stabling. There is even evidence of domestic animals at Linns.

The historical texts also mention the presence of women in these sites, and broaches, spindle whorls etc, provide material evidence for their presence. There is even archaeological evidence of children from Woodstown. These activities hint less at an armed camp you want to avoid and more at a centre of trade, economy and material goods you want to obtain. Less feared camp and more accepted market community.

By using both historical, archaeological and material culture evidence, this paper will attempt to demonstrate by comparisons with the camps at Woodstown, Linns, Torksey and Aldwark that these camps had a multi-function, more as a market domestic community rather than a fully functioning military camp whose sole function was raiding.

2 "ABSENCE OF EVIDENCE IS NOT EVIDENCE OF ABSENCE," ADDRESSING THE ROLES OF WOMEN IN EARLY VIKING AGE ENCAMPMENTS

Abstract author(s): West, Elizabeth (University of Liverpool)

Abstract format: Oral

Early Vikings within Britain and Ireland and continental Europe often conjure images of bearded warriors with violent intentions of raiding and pillaging. Discussions of activities within Viking encampments during the ninth and early tenth centuries are almost exclusively confined to male activities, with the contributions of women often relegated to a brief comment on their existence before moving on. The presence of women is simply illustrated with a mention of spindle whorls or brooches, and little is done to expand upon the significant roles women played as part of the support system surrounding these fighting forces. Women in the encampments held various roles from specialised crafts-women to water bearers. As corner-stones of the supply chain, they were also essential contributors and consumers of the thriving domestic economies that surrounded these transient communities.

This paper will focus on the Viking camp environment, seeking to demonstrate the presence of women amongst fighting forces. Evidence from multiple sources confirms their presence, including the identification of female skeletal remains within the Repton charnel grave and contemporary literature which mentions women within both the Great Viking Army in England and the siege force in Paris. However, artefacts that suggest a female presence in Viking camps have been considered ambiguous, rather than proof of female involvement. One example is jewellery made for women being interpreted as gifts for relatives back in Scandinavia, rather than as personal ornaments worn by females on site. Archaeological evidence from sites such as Aldwark, Torksey and Woodstown, alongside methods from experimental archaeology used to clarify the products of tools found on these sites, will be used in conjunction with contemporary accounts from chroniclers to confront the ambiguity surrounding women in encampments. Traditional interpretations will be challenged and a new approach proposed that focuses on female activities.

3 NOT JUST FOR MEN: THE POWER AND STATUS OF VIKING AGE WOMEN IN CHURCHYARD BURIALS IN THE ATLANTIC ARCHIPELAGO

Abstract author(s): Ramsey-Brimberg, Danica (Independent Researcher)

Abstract format: Oral

Outside of Scandinavia, the narrative of conversion and Christianisation has largely been tied to men aligning themselves with Christianity through marriages and alliances, underscoring efforts to achieve power and status in the Atlantic Archipelago. Yet, Viking Age furnished graves with female-sexed skeletal remains or gender-associated graves goods have been uncovered in churches, chapels, and monasteries, suggesting burial at sites locally associated with

power and status was not solely for men. While the complex narrative has been explored regarding Scandinavia and Iceland (Garipano 2014; Wicker 2012) and men in eastern England (Hadley 2008), an in-depth analysis of burials has not been undertaken for women throughout the Atlantic Archipelago. Notable examples are at Finglas, Co. Dublin, Ireland (Sikora 2010); Saffron Walden, Essex, England (Evison 1969); St. Patrick's Isle, Isle of Man (Freke et al. 2002); and Iona, Scotland (Campbell et al. 2019). The geographical scope allows comparison among areas already Christianised, but with different political, economic, and social influences. Combining multiple sources of evidence affords a greater understanding of how gender played a role in locating certain individuals at ecclesiastical sites between the eighth and eleventh centuries. Sources include burials, churches, laws, wills, place and personal names, runic inscriptions, and geography. Once the pre-existing presence of a church has been established, the composition, organisation, and placement of the grave with female-sexed skeletal remains and/or female-associated grave goods will be analysed and compared to wider patterns of the burials of medieval women and of individuals of power and status. As the most recent work has been by men (McLeod 2011 & 2018), this new narrative on the burial of Viking Age women affords a different perspective. While not necessarily of the same status as men, women were not superfluous or passive participants in settlement, something evident by the graves being placed in churchyards.

4 WEAVING THE NARRATIVE THREADS OF TEXTILE ARCHAEOLOGY: TABLET-WEAVING

Abstract author(s): Gould, Georgia (University College London)

Abstract format: Oral

Medieval Scandinavian tablet-weaving and textile production have been discussed in academic publications for over a hundred years, often in archaeological journals and partial book releases. However, in much of the corpus of academic literature, analysis is clinical, examining the woven structures and fibres of these bands in limited context.

Tablet-weaving has been used functionally as edging to strengthen garments or as strong borders to tapestries. However, textiles can be seen sometimes as a form of woven art - either fixed in decor, portable or wearable - due to the woven technique or motifs of their constructed design. There has been less attention devoted to the roles of woven ornamentation as potential decoration or their function as woven art. This makes the contextual study of art important when researching textiles, as they are sometimes comparable with jewellery, picture stones, wooden items and metal structures. Although there is some ambiguity in reconstruction, the use of experimental archaeology in recreating both the tablet-woven bands, garments and textiles allows for a further insight to reinterpreting the often-fragmented textile pieces.

It is necessary to reinterpret the role of tablet-weaving not only as a functional textile accompaniment either produced in a home or in an organised production unit, but also as pieces of woven art. This then needs to be placed within its wider contemporary context against contemporary textiles in order to gain potential insight to the societies from which they came, their migratory patterns and international trade routes. In this paper, I will use several tablet-woven artefacts (e.g. the Viking Age textiles from the Oseberg ship burial, Norway) to demonstrate how this interdisciplinary methodology combining textile archaeology, art history and experimental archaeology can provide a conduit to understanding the role of textiles and tablet-woven bands within an early medieval Scandinavian and Northern European setting.

5 SITE METRICS AND CONTINUUMS OF NORTH ICELAND VIKING AGE SETTLEMENT PATTERNS

Abstract author(s): Steinberg, John (UMass Boston) - Zoëga, Guðný (Hólar University) - Bolender, Douglas (UMass Boston) - Catlin, Kathryn (Jacksonville State University)

Abstract format: Oral

A settlement survey of Viking Age farmsteads in North Iceland has yielded a series of site metrics that suggest there was substantial variation during the initial occupation of the North Atlantic island. The 30 Viking Age sites investigated are in a well-defined continuous region. The sites all have midden deposits associated with domestic occupations and probably some sort of dwelling. The metrics collected during the survey include location, environment, site size at the end of the Viking Age, establishment and abandonment dates, movement of the main farmstead, the presence of churches, Christian cemetery organization, and the suggestion of specialized production or consumption (seen in fuel, slag, seeds, and bones). Most of the site metrics are poorly correlated (e.g., the presence or absence of churches and the presence or absence of barley). While the correlated metrics (e.g., site size and establishment date) shed light on the processes of colonization, the general lack of broad associations suggests tremendous variation in sites during the long settlement of Iceland. The variation both confirms and challenges existing interpretations and assumptions about the nature of the settlement of the previously uninhabited landscape. Using one or two metrics, there are obvious site types (e.g., settlement and post-settlement sites, continuously occupied and abandoned sites). When multiple metrics are applied, the lack of correlation and the ambiguity in this dataset becomes clear. Thus, using a site's place along a series of continuums provides a new perspective on the variation in site types during the initial rapid settlement and the following long-term development of the region.

6 UNWEAVING THE VIKING AGE HALL

Abstract author(s): Dickinson, Stephen (Independent researcher)

Abstract format: Oral

Viking Age halls, often presented as key elements of central places of the period, can sometimes be reified as symbols of élite settlement across Scandinavia and the North Atlantic Viking diaspora. Halls can be unambiguously represented as the pinnacles of Viking Age monumental display, achievement, power and ritual expression. Check-lists of criteria and artefacts that determine and define monumental architecture and its rôles can become, sometimes by default, our definitions of site meaning and of status.

In seeking - and perhaps pre-empting - rôles for these buildings, we may be missing more nuanced and multivocal considerations of their functions and status. Anthropological studies of the buildings of traditional societies indicate that, often, the houses built and used by these societies not only stand for social groups, but represent the world around them, and embody the people who erect and who dwell in them.

Archaeological data from the 6th to the 8th centuries indicates that Anglo-Saxon 'great hall' complexes, and the cultures that empowered and encapsulated them, were in decline by c.AD 750 in England, to be replaced by more private and exclusive expressions of élite style and display. Evidence from Scandinavia, Scotland and Northern England suggests that halls from the Viking Age ninth century onwards were intimately embodied with the societies responsible for their building, maintenance and social relevance - and enmeshed within new sets of ambiguities in relation to our understanding of their immediate social, monumental and cultural environments.

Clarifying new contexts for the understanding and articulation of Viking Age architecture need not entail the replacement of one set of definitions with another, rather, that these contexts need to be assessed on their own terms in our evolving explorations of their comprehension.

7 THE NORSE AND THE SEA: LANDING PLACES IN SCANDINAVIAN SCOTLAND

Abstract author(s): Sanmark, Alexandra - McLeod, Shane (Institute for Northern Studies, University of the Highlands and Islands)

Abstract format: Oral

This paper will present early results of the ongoing research project The Norse and the Sea: The Maritime Cultural Landscape of Scandinavian Scotland. This project investigates the maritime cultural landscape in Scandinavian Scotland (c. AD 790-1350), through an interdisciplinary approach using archaeological, written and toponymic evidence and addresses the overarching questions of connectivity and communication in Norse Scotland. The term 'maritime cultural landscape' was originally coined by Norwegian archaeologist Christer Westerdahl to denote 'the unity of remnants of maritime culture on land as well as underwater'. This formed part of his ground-breaking analytical framework developed for the Bothnian/Baltic area and which has been successfully applied in Scandinavia, Germany and the North Atlantic. This concept is virtually unexplored for Scandinavian Scotland, despite being equally applicable to this area. By bringing this innovative research framework combined with archaeological and geophysical fieldwork to Scotland, this project is generating new data on maritime culture and enabling important study of this geographic area from a whole new perspective.

This presentation will focus on the identification and investigation of Viking age and Norse landing sites on the western seaboard of Scotland. Despite the maritime element of the Viking-age settlement process, very few landing sites have been identified and the few that are known have not been investigated in detail. This is in large part due to the ambiguous and multi-purpose aspects of the sites themselves. In this paper, the methodology of locating landing sites in the Hebrides through a combination of toponymic, archaeological and written evidence in conjunction with Fetch analysis is explored. The key traits of landing sites are studied as well as the roles of landing sites as nodes in the wider communication network between Ireland, Scotland, and Scandinavia.

8 AN INTERDISCIPLINARY FIELD APPROACH ON NORSE LANDING PLACES IN WESTERN SCOTLAND: FIRST RESULTS FROM THE ISLES OF EIGG AND COLONSAY

Abstract author(s): Lu, Erman - Wilken, Dennis (Christian-Albrecht-University of Kiel) - Sanmark, Alexandra (University of the Highlands and Islands) - Kalmring, Sven (National Historical Museums, Sweden) - McLeod, Shane - Jennings, Andrew (University of the Highlands and Islands)

Abstract format: Oral

The joint British-German AHRC/DFG Research Project 'the Norse and the Sea: The Maritime Cultural Landscape of Scandinavian Scotland' aims to investigate the maritime cultural landscape in Scandinavian Scotland through an interdisciplinary approach using archaeological, written and toponymic evidence, as well as geophysical and remote sensing techniques to address the overarching questions of connectivity and communication of the Norse in western Scotland. So far two sites, the Bay of Laig on the Isle of Eigg and the Kiloran Bay on the Isle of Colonsay, were

selected for detailed investigation and fieldwork. The sites were selected from a shortlist of likely harbours/landing places based on topographical study, analysis of place-name and archaeological remains. The aims of the fieldwork were to understand the landscape conditions of the presumed landing places and to locate and investigate possible archaeological remains.

Non-invasive geophysical surveys and test pits were incorporated into the field campaigns. This paper presents the first results of these fieldworks, presenting a combination of electromagnetic induction (EMI), ground penetrating radar (GPR), and LiDAR data as well as test pits that were opened at select locations for ground truthing reasons. The starting point of both remote sensing surveys were, in addition to suggestive place-names such as 'Sròn Laimhrige' (Rock of the Landing Place) in the Bay of Laig, two prominent finds: two pieces of boat stems on Eigg and a Viking ship burial on Colonsay. The presented approach combining different field and historic methods tries to increase the scope for discussion of variety and ambiguity in the datasets as well as interpretation and re-interpretation of the datasets.

9 A GOOD HAVEN AT SANDAY: USING HRAFNS SAGA SVEINBJARNARSON TO CONSIDER ANCHORAGES AND LANDING SITES IN THE LATE NORSE HEBRIDES

Abstract author(s): Randall, Peter (University of the Highlands and Islands)

Abstract format: Oral

This paper will present a case study of potential anchorages and landing-sites on the Isle of Sanday, investigated on the basis of an account from Hrafn saga Sveinbjarnarson. Though the account concerns the anchorage of an Icelandic merchant ship in 1202, utilisation of the seascape is to be considered in the *longue durée* due to the continuation of naval technologies and maritime practices from the Viking Age into the Hebrides' Late Norse Period.

The relevant passage will be summarised and analysed with regard to its historicity and narrative. Hrafn saga offers detail on the Icelanders' experience at anchor, the practicalities of sailing and navigation, and interactions between the Icelanders and local Hebrideans. It provides insight into how the crew conceptualised and utilised places along the Hebridean coastline. However, the saga does not provide sufficient detail to determine if the same anchorages and landing-sites were used by the local population, and the text cannot be used to pinpoint sites.

It is, therefore, critical to incorporate topographic, toponymic, and oceanographic data. Coastal features will be considered using approaches developed for identifying Viking Age landing-sites across the North Atlantic. The investigation of Scottish Gaelic toponyms in Sanday and the neighbouring isles enables the identification of relevant locations and allows for consideration of Sanday's position relative to wider sea routes. Finally, mapping out wind fetch data with GIS demonstrates feasible sailing routes on approaching and leaving the isle.

In this multidisciplinary approach there is potential for the identification of maritime sites that often leave little material trace. Skaldic verse, names in the landscape and even windspeed allow us to envision anew how Norse sailors understood and utilised the coastline. In this way, the paper will challenge oft-assumed limitations of site-identification, and invite questions regarding the distinctions drawn between sites of anchorage, landing and assembly.

150 THE ARCHAEOLOGY OF LUXURY: CRAFTSMANSHIP, CONSUMPTION, AND DESIRABILITY IN ARCHAEOLOGICAL PERSPECTIVE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Gomes, Francisco (UNIARQ - Centre for Archaeology of the University of Lisbon; School of Arts and Humanities of the University of Lisbon) - Meo, Francesco (Department of Cultural Heritage of the University of Salento)

Session format: Regular session

Luxury as a concept has had many and often conflicting meanings and connotations throughout history. Seen as morally dubious throughout Antiquity and the Middle Ages, it received a mostly positive spin beginning in the Early Modern period but is nowadays once more under critique. However, the archaeological record for most, if not all, periods is rich in evidence for the production, circulation, and consumption of differentiated crafted products imbued with added material, aesthetic, and social value.

In the interpretation of these goods and their significance, the anthropological language of 'prestige' has been dominant. In this session, we wish to explore the potential of 'luxury' as a complementary conceptual framework, drawing on recent research which highlighted desirability as a key feature of past high status material culture. This session aims to bring together case studies, from Antiquity and beyond, illustrating the complex interplay of material qualities and socially assigned values which set specific crafts and products aside as valuable, desirable, and ultimately luxurious.

Focusing on craft activities, we invite participants to reflect on the connections between production – including discussions of craftsmanship, specialization, and 'branding', and how they affect the perceived desirability of goods – and

consumption, taken as a socially and politically laden phenomenon. Methodological discussions on how to identify and interpret luxury productions in the archaeological record are especially welcome, as are insights into the role of long-distance trade in creating trans-cultural languages of luxury.

In promoting a cross-craft, cross-cultural, and integrated comparative approach, we hope to promote a reflection on luxury as a contextual, situational, and relational category and to explore its conceptual utility for an exploration of social relations, craft development and creative expression in the past.

ABSTRACTS

1 SHARED LUXURY? COLLECTIVE ACTION AND COMPLEX TECHNOLOGIES IN STATELESS SOCIETIES

Abstract author(s): Martinon-Torres, Marcos - Benzonelli, Agnese (University of Cambridge) - Campos Quintero, Lina (Museo del Oro, Colombia) - Crawford, Rosie - Klesner, Catherine - Kneale, Catherine (University of Cambridge) - Legarra Herrero, Borja (University College London) - Quintero Guzman, Juan Pablo - Saenz Samper, Juanita - Uribe Villegas, Maria Alicia (Museo del Oro, Colombia)

Abstract format: Oral

Most anthropological and sociological studies of luxury focus on consumption: they emphasise desirability and rarity, and the associated prestige, as the defining elements of luxury items. From this perspective, luxury is assumed to reinforce differences between the 'haves' and the 'have-nots' in a community.

The REVERSEACTION project (www.reverseaction.org) is fostering an understanding of luxury that is defined by production rather than consumption. Luxury items are thus those that materialise exceptional expense in materials provision, skills and/or labour, and not geared towards subsistence – but without assumptions about ownership, power structures, and craft organisation. This perspective allows for the identification of luxury products in societies without coercive authorities or attached craft specialists, where some degree of cooperation or collective action must have been required.

This presentation will outline some case studies from the prehistoric Aegean and pre-Hispanic America with evidence of complex, non-utilitarian, 'luxury' technologies. Scientific analyses and contextual information allow the reverse engineering of these artefacts, their life-histories, and the underlying sociotechnical systems. We argue that, in some instances, complex and exotic artefacts were shared among many, and their production and use reinforced horizontal ties within a community rather than vertical differences.

Overall, we challenge the fallacy that complex 'luxury' technologies are the preserve of hierarchical societies with strong, pyramidal and coercive division of labour, as well as an ethnocentric understanding of luxury that is in clear need of revision.

2 APPLICATION OF GEOSPATIAL ANALYSES FOR THE IDENTIFICATION OF LONG-DISTANCE TRADE ROUTES IN EGYPT AND EASTERN SUDAN

Abstract author(s): Zaia, Sara (Harvard University)

Abstract format: Oral

The fabulous land of Punt is mostly known for its representation on the wall reliefs of the temple of queen Hatshepsut at Deir el-Bahari and the tale of the Shipwreck Sailor. The ancient Egyptians undertook long voyages to Punt to obtain precious materials, such as frankincense, myrrh, ivory, ebony, and animal skins, imbued with mystical significance, and crucial to perform rituals necessary to maintain the cosmic order of Maat and to grant the pharaoh the right to rule over Egypt. Although the archaeological investigation of the last decades has suggested that part of Punt was in Eastern Africa, modern Eastern Sudan, Eritrea, and Somalia, the information regarding the organization of trade expeditions to Punt is scarce and incomplete. Through remote sensing and GIS analyses the present study identifies the most efficient long-distance trade routes connecting Memphis (modern Cairo) and Kassala (identified as part of Punt). Such routes cross the Egyptian Eastern desert, run along the Red Sea coast, and traverse the Sudanese Eastern desert to reach Kassala.

3 A NEW LOOK ON NEAR EASTERN IVORY EXCHANGE: THE CASE OF THE SOUTHERN LEVANT

Abstract author(s): Shochat, Harel (University of Haifa)

Abstract format: Oral

Extensive excavations in the southern Levant have yielded hundreds of artifacts made of the highly valued and prestigious material of ivory dated to the mid-second to mid-first millennium BCE. Most were found as caches in temples or palaces, but they are also routinely recovered from other public, cultic, and domestic contexts. To date, most

scholarly interest has focused almost exclusively on art historical analyses of the more elaborately decorated items, but the raw material origins of these ivories and their geographic provenance remain unknown. The Levantine Ivory Research Project (LIRA) investigates how ivory artifacts, and their meanings were embedded in Canaanite and other Levantine societies.

We developed an integrative investigation protocol for studying the ivory exchange using an interdisciplinary approach. The core archaeological practices were applied to study distribution and consumption trends. We applied analytical methods - microscopy, spectroscopy, stable isotopes, and proteomics - to document molecular information embedded in the ivory objects, thus tracing their taxonomic origin and geographic provenance.

Here, we demonstrate the successful application of a network approach in outlining the ivory exchange biography for the first time from an empirical perspective. Spatial, chronological, typological, and contextual dispersal trends are interpreted to reconstruct the cultural role of ivory and its local exchange mechanism. The proteomic and stable isotope analyses successfully trace the raw material sourcing pools to sub-Saharan landscapes of east African savannas. It allows us to reevaluate Egypt's and Nubia's agency in the luxurious material supply chain network and in shaping its inter-regional exchange as expert trade from its sources to the end markets.

4 NEAR EASTERN KOINE AND LUXURY ITEMS CONSUMPTION IN THE NEO-ASSYRIAN EMPIRE AND BEYOND

Abstract author(s): Baaklini, Adonice (Sorbonne University, UMR Orient et Méditerranée; Eveha International)

Abstract format: Oral

During the first half of the first millennium, a relative cultural homogeneity can be noticed throughout the Near East, whether in the territories integrated to the Neo-Assyrian Empire, or in its peripheral areas. That koine is characterised by luxury items – mainly tableware, glyptic, and sculpture – initially used at the Assyrian court and by the Assyrian elites. The question of the formation of that koine, and the way that Assyrian related material culture spread around the Near East and the Eastern Mediterranean, is a significant one. Scholars traditionally explained the spread of that new material culture by the will of the Assyrians: colonisation, cultural imperialism, installation of Assyrian administrators and armed forces, etc. This paper proposes another model of interpretation. Indeed, the luxury nature of the items that translate the cultural koine could tentatively be explained by the elite competitive emulation and conspicuous consumption, giving a more prominent role to the local elites of the imperial provinces and peripheral states. The aim of this paper is to show that this last explanatory model is the most suitable according to the archaeological remains, when discussing their nature, chronology, and distribution.

5 FROM PRODUCTION TO DESTRUCTION: THE INHERENT SOCIAL VALUE OF THE SCULPTURES OF KUNULUA (TAYINAT HÖYÜK) IN HATAY, TURKEY

Abstract author(s): Denel, Elif (American Research Institute in Turkey) - Zaher, Rana (Tayinat Excavations)

Abstract format: Oral

Monumental sculptures of the Iron Age Syro-Hittite kingdoms of southeast Turkey and north Syria have long been investigated along with furniture inlays of bone and ivory. The artistic traditions across different media served to determine regional artistic traditions and inter-regional influence as part of trade relations and cultural exchange. Within this framework, portable luxury goods with distinctive decorative and artistic elements have been traditionally singled out as bearers of aesthetic values particular to the elites. As such, portable objects were also highlighted for their potential of cross-cultural exchange of technique and knowledge. However, large-scale stone sculptures with their specific artistic and materialistic characteristics also stand out as luxury items associated especially with the highest levels of societies.

Several monumental sculptures discovered in the Tayinat Höyük excavations, conducted first in 1930's by the Oriental Institute and then since 2006 by the University of Toronto, illustrate the power strategies of the local rulers and the elite in the kingdom of Kunulua. Whether or not the craftsmen responsible for the creation of these large-scale sculptures were itinerant, they reflect rulership and elite ideals within the larger region. In other words, these ideals were not specific to each kingdom, but were commonly shared across cultures and regions. Excavations revealed that sculptures were discarded, some after suffering deliberate damage, possibly as expression of change in political domination. This paper will investigate the influential and reciprocal relationship between monumental sculpture and portable luxury goods and the performative disfigurement of these objects as an act of devaluation of the materials from which they were created along with an act of annihilation of what these objects represented.

6 DESIRABLE OBJECTS 3000 YEARS AGO IN CENTRAL EUROPE - TEXTILES WITH GOLD THREADS

Abstract author(s): Groemer, Karina (Natural History Museum Vienna)

Abstract format: Oral

Throughout history, gold-woven textiles and garments have been special luxury goods, often reserved only for the religious and social elites.

The Old Testament, whose oldest passages were probably written down in the 9th century B.C. according to a long oral tradition, tells us in the Book of Exodus (Ex 39:1-3) about the production of priestly garments. The Greek poet Homer also praises golden garments in his works *Odyssey* and *Iliad*, whose creation historians date to the end of the 9th century BC.

Woven fabrics in which, for example, gold wires or strips were included for decoration are found in Central Europe primarily in the Late Bronze Age and Hallstatt Period. A new find with gold threads comes from the gold treasure of Ebreichsdorf in Austria, whose structure clearly indicates that they were once woven into a textile. Interdisciplinary analyses of the gold and handcraft techniques have been applied to understand the complex interplay between the material, socially assigned values and trade as well as social networks. Comparative objects from c 1200-1000 BCE are known from other sites in Austria, Hungary and Bavaria, such as Vösendorf, Óbuda or Várvölgy.

The gold textile from Ebreichsdorf thus fits into a series of very high quality textiles, which understandable as trans-cultural language of luxury, in ancient times were virtually the symbol of royalty and divinity. Even cross-chronological, in modern times, gold threads were used for coronation robes or liturgical vestments, for example.

7 WAS THE SCYTHIAN GOLDEN CLOTHING EXCLUSIVELY FUNERARY?

Abstract author(s): Lifantii, Oksana (National Museum of History of Ukraine)

Abstract format: Oral

Wealthy Scythians are known not least due to their clothing embroidered with gold. There is even a name, “golden people” that in most cases was used due to the Saka costume. However, the same idea of richly gold-adorned garments was popular among Scythians, who lived westward from Saka in the Northern Black sea area.

There is a belief among mostly Russian specialists (S. Chernikov, N. Onayko, L. Elnitskiy, D. Zhuravlev, L. Firsov, V. Gulyaev) that the Scythians only used such gold-decorated garments only as a funeral and did not wear them during life. Some of them, resp. V.Gulyaev and E. Savchenko proposed the existence of “special groups of funerary artisans” who made a series of gold appliques and other jewellery specifically for funeral rites.

However, nowadays, there is plenty of evidence of the usage of such clothes and only a few cases of freshly made appliques in some Scythian tombs. The main arguments favour using such clothes are numerous deformations and alterations of appliques that once were sewn on them (e.g. finds from Tovsta Mohyla, Chortomyk, Haimanova Mohyla, Kul-Oba tumulus and many others).

I could not also fully agree with the dramatically opposed belief that such golden clothes were always used during the owner’s life (due to S.Polin). In some cases, appliques edges can be with burrs that can point to a lack of usage during the owner’s life. However, such cases are rare and primarily characteristic for some appliques that probably replaced the lost ones. It is almost impossible to find a complete set of one dress decorations without traces of usage.

8 THE SOCIAL LIFE OF ‘TRINKETS’: CONCEPTUALIZING LUXURY IN THE SOUTHERN PORTUGUESE IRON AGE THROUGH ADORNMENT OBJECTS

Abstract author(s): Gomes, Francisco (UNIARQ - Centre for Archaeology of the University of Lisbon; School of Arts and Humanities of the University of Lisbon)

Abstract format: Oral

The Greek word ‘athrymata’, meaning trinkets or curios, is still sometimes used in scientific literature in reference to a broad spectrum of small objects introduced through Phoenician and, later, Punic trade in various cultural contexts around the Mediterranean. The intellectual and conceptual background for such a terminological choice – including an historiographical devaluation of Phoenician crafts and a persistently negative view, albeit from different angles, of Phoenician trade practices – would be well worth exploring. However, and more importantly, it is necessary to develop contextual studies to understand whether such a terminology really accounts for the ways in which local communities viewed and consumed these objects.

The so-called “Orientalizing” Period of Southwestern Iberia is a good laboratory to explore this issue and its conceptual implications. In fact, the trade and consumption of craft goods, some of which in precious, rare and/or exotic materials, was one of the cornerstones of the establishment of social, political, and economic relations between the Levantine groups who settled in the area in the early first millennium BCE and the local communities, and particu-

larly their elites. Having long been recognized as key in the ensuing development of the regional Iron Age social and political structures, these goods, which have been interpreted through the anthropological language of prestige, can equally be said to constitute the building blocks of a social language of luxury with strong socio-political overtones.

Such readings have focused on specific goods and crafts, like metalwork and ivory carving, but a vast array of other 'exotica' have deserved less consideration. This presentation focuses on the substantial assemblages of smaller adornment elements present in Southern Portuguese contexts, deploying a contextual analysis to assess the social significance of these objects, which illustrate not only the contextual, but also the relational significance of luxury as a social category.

9 THE WEALTH OF TEXTILE CRAFTSMANSHIP IN MOTYA

Abstract author(s): Ferrante, Nina (Sapienza University of Rome)

Abstract format: Oral

The 'precious garments' mentioned by Diodorus Siculus when describing the spoils of the island of Motya (Sicily, Italy) lead one to reflect on the role textiles played in the ancient city.

In archaeological terms, textile production often leaves no obvious traces. In Motya, however, the archaeological remains of textile tools, used for weaving, are remarkable. Excavations conducted over more than a century and recent research carried out as part of my PhD at Sapienza University of Rome have yielded a wealth of data that partly allow us to reconstruct textile production on the island.

There is evidence of a large quantity of loom weights in Motya, often grouped together, which may have belonged to specific loom sets and, in one lucky case, the imprint of the warp-weighted loom, with its associated loom weights, has also been preserved.

Also noteworthy are the markings placed on the body of many loom weights, which may have indicated the value of the garments made, as well as the weaver's or buyer's mark, or may have had a functional purpose in weaving.

On the island, in fact, there were probably also very valuable fabrics made using tablet weaving, and there were also craft areas where the dyeing of valuable garments took place.

Tablet weaving, known in Peninsular Italy since the Bronze Age, was mainly used to make the borders of valuable fabrics, creating complex decorative patterns with the use of coloured and precious yarns.

All this data indicates a very rich and diversified production of textiles in a society, where different cultures and traditions intertwined.

In this paper, through the analysis of archaeological, literary, and iconographic evidence, aspects of Motya's textile craftsmanship will be outlined.

10 ITEMS AND LUXURY PERCEPTION IN THE PRE-ROMAN SOCIETIES OF SOUTH ITALY

Abstract author(s): Meo, Francesco (University of Salento)

Abstract format: Oral

Items are considered of luxury only if a society recognizes them as such. They therefore vary according to the social structure, but also depending on the real economic capacity and access to goods that each society has.

Luxury items that are purchased and spread among the populations are recognized by societies as "trendy". In some cases the same goods are found in archaeological contexts of different populations, bought by the aristocracies to emulate the prestige of those of the place of origin.

However, even if the same objects are in use in the same period, the social structure of the populations implies a different use. As an example, some decorative patterns applied in the Greek towns of South Italy on temples were instead used, in some indigenous populations, as decoration of aristocratic dwellings by those who wanted to demonstrate their status.

This paper therefore intends to analyse some aspects of luxury by contextualizing them in societies and in different chronological periods.

11 LUXURY IN HELLENISTIC MACEDONIA. THE CASES OF GOLD AND IVORY PIECES OF FURNITURE AND PRECIOUS WEAPONRY

Abstract author(s): Stamatopoulou, Vasiliki (The Greek Ministry of Culture / The Hellenic Open University)

Abstract format: Oral

Luxury permeates every aspect of elite life in Hellenistic Macedonia. The immense profits from the Asian campaign of Alexander III and the Macedonians arrived with the veterans in Macedonia and were spent, among other things, on

creating elaborate domestic and funerary interiors including extravagant pieces of furniture that were later placed in tombs as grave offerings.

The splendor of the elaborate decoration of these pieces of furniture with a plethora of costly materials - ivory, glass, gold, silver, gilded stucco, and heavy textiles, is examined in this paper as a social phenomenon. Artifacts decorated in this manner and with these materials until then had been used only for chryselephantine statues of gods. Hellenistic nobles reposing on pieces that looked appropriate to a god, appeared elevated in the sphere of the divine, manifesting superhuman grandeur and power.

After having lived for long as warriors and having acquired power through war, men of this class further declare their wealth and military power with luxurious armor and weapons decorated with precious materials and elaborate motifs.

The possession of these objects was a demonstration of prestige and social status, it identifies, separates, and glorifies the social group represented by the possession of such objects which is the class of the hetairoi, who flank the Macedonian king.

The paper also seeks to identify the production workshops and their distribution network, which, due to the superior quality of these products, seem to have had a long and well-established tradition.

12 **ICONOGRAPHY IN ITS CONTEXT: IBERIAN DECORATED VESSELS AND PUBLIC DISPLAY IN LATE PERIOD PRE-ROMAN IBERIA (3RD-1ST CENTURIES BCE)**

Abstract author(s): Harding, Pablo (Universidad Autónoma de Madrid)

Abstract format: Oral

This paper sets out to examine the interplay of iconography and public consumption as factors in the study of value as the contextually specific concept of a given society. We will focus on a case study, the decorated ceramic vessels of Late Period Iberia (3rd-1st centuries BCE), highlighting two points:

Firstly, how the vessels themselves owe their very luxury status to iconography. From a technical standpoint, they are mostly identical in manufacture, quality, and shape to more common Iberian ware. Nonetheless, they bear traditional Iberian iconography, the long-lived medium of ideological expression and legitimation of the Iberian elites, and so these decorated vessels are elevated above other ceramic productions. They existed as specially commissioned objects tailored to the tastes of the Iberian elites and circulated exclusively within aristocratic circles, accompanied by other traditional luxury items such as imported black-glaze ware.

Secondly: the uses of these luxury products. We studied the relationship between vessel types, decoration preferences and trends, and archaeological contexts to centre on the range of activities in which the vessels were used. Identified uses were limited in number and mostly concerned with the consumption of food and drink. Identified activities included: storage, ritual and communal feasting, display in domestic and sacred spaces, consumption during ritual events, libation, and deposition as funerary objects or during ritual events. This wide array of activities coincides with many of the main avenues of display employed by Iberian elites.

Decorated vessels of the Iberian Late Period reveal the intersection of different but complementary systems of conceiving value: traditional iconography, consumption, limited circulation, and public display. These systems are tightly tied to the ways of life of Iberian elites in their specific context, who recall the images of their past and participate in traditional rites while also living under Roman rule.

13 **"RE-CRAFTING THE LUXURY OF TEXTILES": A REFLECTION ON THE DESIRABILITY OF INSTRUMENTA TEXTILIA IN ROMAN TIMES**

Abstract author(s): Morgado-Roncal, Leyre (University of Granada)

Abstract format: Oral

The Archaeology of Roman Textile Production is a fascinating and complex area of research. Textiles offer an insight into social status, identity, gender, body tales, the production process, the artisans and so much more. Consequently, at times, their archaeological vestiges portray "luxury". However, there has been a constant hope of finding archaeological textiles, but in regions such as the Iberian Peninsula, is simply extremely difficult to preserve them, hence the necessity to examine other textile remains.

In this communication we will be discussing the role of instrumenta textilia as an indicator of "luxurious" productions in Roman times. Textile tools constitute one of the most numerous and common evidence of Textile Archaeology. Despite this, the fact that they are multifunctional, "standard", plus the raw materials used, can disguise the idea of specialization, craftsmanship and even "prestige". Through several case studies of textile tools from Spain and Italy we will analyze their potential to showcase "luxury" and identify "exclusive" productions. In doing so, we expect to promote a reflection on the desirability of instrumenta textilia and explore how we perceive luxury in Roman textile productions.

Finally, we hope that our case study both helps to broaden the perception of “luxury” and to reflect on how to approximate textile handcrafts in order to approach high status material culture elements.

14 **DESIRABILITY AS A GATEWAY TOWARDS PRESTIGE. THE SPREAD OF IZALCO USULUTÁN AMONG THE COMMUNITIES OF LATE PRECLASSIC CENTRAL AMERICA**

Abstract author(s): Martinet, Adrien (Commission for Archaeology of Non-European Cultures; University of Bonn)

Abstract format: Oral

Izalco Usulután is an outlier in the highly regionalized ceramic landscape of Late Preclassic Upper Central America. It is arguably the most complex to manufacture of all the sub-types of the ubiquitous Usulután wares found throughout the region as its durability and surface decorations not only required skilled artisans to be achieved, but also access to specific resources guaranteeing the best results. These vessels – mainly used for serving – were fine-pasted, lightweight, hard-fired, polished to a glossy finish, and decorated with nearly indelible resist lines, blotches, and swirls. Given the mostly simple designs of vessel forms and surface patterns present in its typology, the quality of the ware itself and its execution must have played an important role in its early adoption as a prestige ceramic used in – mainly elite – feasting events.

Furthermore, prestige alone insufficiently explains its long-range spread from its native El Salvador, reaching into Guatemala in the north and as far south as Nicaragua, influencing multiple ceramic wares along the way and even generating local emulations in some communities.

Looking at Izalco Usulután ceramics through the lens of “luxury” allows for more flexible interpretations of the socio-political relationships between communities, departing from the often hierarchical implications proposed by “prestige”-oriented analyses. It also offers insights into the “parameters of desirability” applied to material culture and shared by the Central American cultural patchwork of the Late Preclassic period.

Given the complexity of the question of the influence and “afterlife” of the Usulután style – Izalco being the Nec plus Ultra of its execution – the study of “luxury” might open exciting new paths for future research bettering our currently hazy understanding of its influence on Maya ceramic styles.

15 **GLASS SPOON IN A PIT HOUSE - THE PECULIARITY OF EARLY ROMAN GLASS USAGE IN AQUINCUM**

Abstract author(s): Kelemen, Zsófia (Budapest History Museum; Eötvös Loránd University)

Abstract format: Oral

Even though Aquincum, the roman predecessor of the hungarian capital, has been systematically researched in the last 130 years, very little attention was directed on the glass consumption of the ancient town. Of course, some of the findings are published and most of the outstanding and significant pieces are displayed but attention was not yet directed on the wider context or socio-economic background of these. My research aims to fill this decades-old gap in the research by analysing both residual glass waste and the corresponding vitreous grave goods. This allows a far better understanding of how glass vessels was used and it's easier to determine if an item could really have been a luxury. During evaluation a very interesting trend could be seen: the earliest periods of the settlement contains many pieces of vessels that could be labeled unique. Not only from a numerical aspect, although some forms are represented only by few known example not just in Aquincum, but in Pannonia as a whole, but considering their outstanding quality. This is even more interesting with the added fact that these pieces must have arrived here by trade because local glass making is nonexistent during the period in question (second half of the 1st century AD) as the native celts did not use glass vessels. In my presentation I intend to demonstrate this phenomenon through case studies with the aim to showcase how these items, which could be considered luxury, had a very important part in the identity of Aquincum's first roman inhabitants.

16 **THE DESIRABILITY OF IRON OBJECTS IN KOFUN PERIOD JAPAN**

Abstract author(s): Stein, Britta (Martin-Luther-University Halle-Wittenberg)

Abstract format: Oral

While the introduction of lamellar armour and stirrups firmly situates Kofun-Period Japan within a long-distance trade network in Eurasia, the use of these objects differs greatly from the use in of the same or similar objects in Europe and Asia.

The middle Kofun period (5th century CE), was a time of profound changes in Kofun period society. It is characterised by a sharp increase military equipment and horse gear among the burial goods, while the importance of non-military objects decreased.

There is, however, a distinct lack of fortifications and an equal scarcity of skeletons showing signs of injury which would indicate that warfare actually took place on the Japanese islands.

Military equipment, therefore, must have served a different purpose in Kofun period society. Past and present discussions about military equipment and military activities of the Kofun people tend to omit the desirability and high value of the iron itself which is transferred to iron objects. As there is no evidence of iron smelting on the Japanese islands during the 5th and early 6th centuries, all iron had to be imported from the Eurasian mainland. Iron was thus highly valuable and accessible in large quantities only to a select few. Its desirability was further enhanced by the introduction of a new, exotic iron objects from the Eurasian mainland.

This paper will show how iron objects as well as access to specialised craftsmen were utilized by the elite in the Kinki region, the political and economic centre of the Kofun period, to form a network of allies via the distribution of prestigious objects to local chiefs. Centralised production of weapons and armour ensured a scarcity in the peripheral regions while the elite in the centre used their monopoly to strengthen and legitimize their social position and power.

17 LUXURY WARE OR COFFEE CUP? THE CONSUMPTION OF ORIENTAL DECORATIVE CERAMICS IN OTTOMAN HUNGARY BASED ON THE ARCHAEOLOGICAL RECORD

Abstract author(s): Komori, Tünde (Central European University)

Abstract format: Oral

Oriental decorative ceramics such as Chinese porcelain, Iznik ware, and Persian faience appeared in the territory of Hungary with the Ottoman occupation in the sixteenth century. These ceramics are relatively rare in the archaeological record and only appear at sites that were occupied by the Ottomans indicating that they were highly valued objects of the Ottoman material culture used only by the Ottoman-cultured population in Hungary. It is also a widely accepted paradigm that although Iznik ware in the sixteenth century was considered a luxury ceramic type, Ottomans valued blue and white Chinese porcelain even higher. By the seventeenth century Iznik production declined, and Chinese porcelain became even more important.

The archaeological record of Hungarian Ottoman-occupied sites suggests a rather more complex picture regarding the value of these objects. Since the written evidence is not sufficient for the proper study of the value of porcelain and faience in relation to each other, it is the archaeological finds that research can rely on. The proposed paper explores the indication of the distribution of the finds and contextualizes it from the perspective of trading patterns in order to reconstruct the value and prestige of these objects within the everyday Ottoman material culture of the Hungarian province. One of the main driving questions of this study is whether the term “luxury ware” is accurate in the case of these objects, or they were merely objects in everyday use, available to anyone who needed them for their daily coffee drinking routine.

18 THE BORSTÖ 1 WRECK IN FINNISH ARCHIPELAGO: SHINY PORCELAIN, GOLDEN SNUFFBOXES, TORTOISE SHELL FANS AND POCKET WATCHES

Abstract author(s): Alvik, Riikka (Finnish Heritage Agency; University of Helsinki)

Abstract format: Oral

Maritime trade and consumption went hand in hand in the 18th century. The Gulf of Finland was a highway for products like sugar, coffee, tea, dyes, metals, and textiles, but the ships carried also luxury things for the elite – court members, upper class people wealthy merchants. They had wealth, power and social status which made the consumption of luxury possible. The 18th century social order was about balance in the society and consumption by social class was part of it. Luxury things carried messages of wealth, power and high social status, and such things were not allowed for everyone.

The volume of trade increased in the 18th-century, but maritime safety was still quite poor, and shipwrecks occurred. The northern Baltic Sea is known of its rich underwater cultural heritage. In this paper, a unique material assemblage of a shipwreck site from Finnish Archipelago is presented. The unidentified wreck called Borstö 1 was found already in late 1950's. The navy divers were the first to visit the well-preserved wreck of a wooden sailing vessel, which seemed quite old. The excavation begun in the early 1960's, and things lifted during research periods between 1961 – 1998 are quite remarkable: golden snuffboxes, high - quality pocket watches, decorated fans, a horse wagon and Meissen porcelain dishes, statuettes, and flower vases. Based on finds, the shipwreck occurred around 1750 and the ship was on her way to St. Petersburg. Where did these luxury objects come from and to whom were they meant for?

THE DEVELOPMENT OF WHEELED VEHICLES IN THE EURASIAN STEPPE IN THE BRONZE AGE: A MILITARY AND SOCIAL APPROACH

Abstract author(s): Rzonca, Justyna (Institute of Archaeology Jagiellonian University)

Abstract format: Oral

Wheeled transport can be considered as a revolution in human development history, making an exchange of goods and ideas much more possible. The oldest findings of true vehicles come from the Eurasian Steppe area. Vehicles were a useful tool itself, but soon they acquired a very different role. They appeared in burial rites as a grave inventory, especially in the eastern Eurasian Steppe. Vehicles belong to the category of very rare findings and their presence in the burial rite proves their special social and religious importance. This type of rite lasted long, from the Early Bronze Age until the early Late Bronze Age all over the mentioned territory. Wagon graves required a lot of effort and material. By analysing the construction and grave inventory it is possible to recognize the application and role of these early vehicles. One of the main turning points was the invention of the spoked wheel and the adaptation of horses to draw the carts. The finds of graves from the Western Steppes, containing a vehicle combined with a significant amount of weapons from the same context, meant the beginning of a new era in human transportation. This kind of wagon actually fulfils the definition of a chariot: an invention, that improved combat and also was a very important symbol in the worldview of BA societies. Vehicles were present in the graves even though their shape and function changed and to place them in a grave required lot of effort, which means that the person buried with a chariot or wagon had a special social status. The questions here are, what does this ritual mean, why were vehicles developed in the steppe to be used in combat and what does the distribution of vehicles among cemeteries say about their role as symbol of social affiliation?

153 WEAVING NARRATIVES OF THE PAST THROUGH MEDIEVAL SMALL FINDS (AD 1000-1550)

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Lewis, Michael (British Museum) - Vargha, Maria (Charles University) - Racz, Tibor (Community Archaeology Association) - Sawicki, Jakub (Academy of Sciences of the Czech Republic)

Session format: Regular session

Archaeological finds are key to understanding the lives of past peoples, and this is especially true for the medieval period. Across Europe, our approach to understanding material culture differs, in many ways dictated by modern political boundaries, cultural differences and attitudes towards heritage protection: indeed, our lens to the past is manifestly through the present. This makes it difficult for archaeologists interested in archaeological small finds to understand them holistically, across states and areas that existed in the past but do not (necessarily) survive today. Therefore, this session's purpose is to encourage international/pan-European dialogue about the past through medieval small finds, with a particular focus (this time) on metal items.

Specifically, we are interested in contributions that: consider theoretical/digital approaches to analysing big data to understand broad trends in material culture across Europe (c. AD 1000-1550); or, look at specific object types across parts of Europe (even across regions) to understand typology, distribution, contacts and trade links etc; or, approaches to understanding the composition of finds, the sources of raw materials and (therefore) their 'life story'. It is key that papers have a pan-European focus, but they may begin weaving their narrative of the past from a local (insular) perspective.

ABSTRACTS

1 CHALLENGES TO PAN-EUROPEAN APPROACHES TO STUDYING ARCHAEOLOGICAL SMALL FINDS

Abstract author(s): Lewis, Michael (British Museum)

Abstract format: Oral

Europe's political boundaries have changed much since the Middle Ages (1050-1550) and throughout that period also. This presents challenges for those interested in studying archaeological small finds, including their development, differences in form and type, and distribution. As a result, most scholars focus on finds types in their areas, or within some traditional entity, without much consideration of them within a pan-European sphere. This is obviously problematic as it does not help to understand them within a wider context.

This paper seeks to highlight the barriers to pan-European approaches to studying archaeological small finds, specifically small metal finds, including those made by the public. This includes the fact that political boundaries have

changed over time, and these do not reflect the states of the Middle Ages. Cultural differences, such as language barriers and attitudes towards certain aspects of archaeology. Also, attitudes towards heritage protection might increase (or decrease) the number of finds available for research.

2 THE DARUFALVA (DRAUSSBURG) HOARD AND ITS CONNECTIONS

Abstract author(s): Langó, Péter (Institute of Archaeology Research Centre for the Humanities)

Abstract format: Oral

The so-called broken silver treasures are present among the 10th-11th century finds of the Carpathian Basin. These finds carry a specific North European connection – as this area was their typical source in the given period (the areas of Scandinavia, present day Poland and Russia, Northern Germany and the Baltic region). The finds are not only and exclusively silver objects or fragments as the gold hoard from Zsennye clearly demonstrates. The presentation wants to bring to the horizon of research again the assemblage unearthed in the 19th century – the treasure of Darufalva, and to highlight what types of connections the 11th century Carpathian Basin had with the regions mentioned. The hoard deserves due attention also, because its evaluation on the international level can be supported only by one single German publication that was published almost half a century ago. The recent Hungarian studies have not been translated, consequently the evaluation of the individual objects including their wider regional connections have not been accessible in English either. In the recent past archaeometallurgic studies have been involved in the research of the material culture of the given period, consequently their preliminary results will be included in the talk, and it also wishes to summarize the relationships of the individual types of artefacts, their parallels found in the Carpathian basin and in the wider Central European context.

3 WHY DID IT BECOME SO POPULAR? TWISTED JEWELLERY FROM THE FORMATIVE PERIOD OF THE HUNGARIAN STATE IN THE CARPATHIAN BASIN

Abstract author(s): Radišić, Milica (Institute of Archaeology, Belgrade)

Abstract format: Oral

The use of wire had an important place in the European crafts milieu during the Antiquity and the Middle Ages, however, jewellery made entirely by twisting wires was specific only to particular periods and geographical areas. It is well known that twisted neck-rings (torcs) and arm-rings were widespread in the north and east of Europe – a huge number of such finds come from famous Viking-age silver hoards. Similar twisted items, mainly made of bronze, were also popular in the Carpathian basin during the last decades of the 10th and the 11th century, but they are less known to a wider scientific audience. Nearly four hundred torcs and probably several hundred twisted bracelets and finger-rings originate from cemeteries of the so-called Arpad period. In previous studies, scholars from Hungary, Romania and the former Yugoslav countries emphasised different causes behind their spread, such as an atavism of the Antiquity, the Avar-period legacy and the influence of Byzantine culture. It is surprising that there has been almost no attempt to interpret these artefacts in the context of fashion influence and craft skills transfer from the Kievan Rus' and the Norse world. Even more so since historical sources hint at some contacts involving commercial and military cooperation between the Hungarian state and the aforementioned regions. This paper will discuss archaeological contexts, as well as morphological and technological characteristics of twisted jewellery in order to gain a better understanding of the nature of the relationships between East-Central Europe and the surrounding world in the beginning of the High Middle ages.

4 STAR-SHAPED BROOCHES AS FUNERARY ITEMS: SOME REMARQUES ON THEIR ORIGIN AND CHRONOLOGY

Abstract author(s): Marcu Istrate, Daniela Veronica (Romanian Academy, "Vasile Pârvan" Institute of Archaeology, Bucharest)

Abstract format: Oral

This paper aims to reopen the debate on the so called "star-shaped brooches", based on two exceptional items uncovered in 2011 in Alba Iulia (Transylvania, RO), in front of the Roman Catholic Cathedral. The today cathedral is a 13th century building. However, churches have been built on the same spot since the 10th century, and a burial site has been opened at the end of the 11th century, to be intensively used in the following centuries. Over 400 graves were uncovered in 2011, overlapping the ruin of a Byzantine style church. Very few of them had funeral items, which typically were earrings with S-shaped end, finger rings or coins. Nevertheless, several graves stand out for their very special inventory, among them being two special star-shaped brooches.

This paper will introduce the artifacts and the archaeological context of their discovery, as extremely relevant from a chronological point of view. Some new hypotheses regarding the origin of these pieces, their evolution over a wide area in Central-Eastern Europe and, last but not least, possible meanings of their fabric and usage, will be discussed.

5 PINS DISCOVERED AT CHURCHYARD CEMETERIES: VARIATIONS OF FORMS, DECORATION AND FUNCTIONS

Abstract author(s): Szocs, Peter Levente (Muzeul Judetean Satu Mare)

Abstract format: Oral

A series of new and older discoveries of pins will be presented coming from medieval and early modern Hungary and Transylvania. Their number is steadily growing due to the extensive archaeological rescue researches at church-yard cemeteries. Pins are found as grave-goods, more precisely as accessories of cloths, head-wears or shrouds, but a considerable number are found in various fills or layers, not connected directly to burials. It is of particular interest that the discovered pins present a high variation of materials (from common metals to noble ones, and their combination); dimensions; forms (from the simplest ones, to spectacular spherical heads); and decoration. All these features, and the position or the context of the discovery permit to identify the function of pins, and even the social status of their bearers. Moreover, variation of materials and decorations might help to identify techniques of production and workshops. Similar forms are present in different contexts, though, which suggests that particular objects could be used for multiple purposes.

6 SUZDAL ARCHANGELS: BETWEEN THE SYMBOLISM AND SPATIAL DISTRIBUTION

Abstract author(s): Fedorina, Anastasia (-) - Makarov, Nikolay (-)

Abstract format: Oral

Pendants in the form of figures of archangels are a well-known group of medieval items, distinguished by the unusual shape of the Christian image and the breadth of the spatial distribution of the finds. Nevertheless it is hard to clarify the importance of different aspects of Archangel' symbolism during the long Middle Ages. The observation of the Suzdal finds, their spatial distribution and co-occurrences with other categories of material culture could outline the circle of wearers of pendants in question, for example their social status.

The paper is devoted to new finds of Christian antiquities with the image of the Archangel, discovered during archaeological surveys of Suzdal settlements. The value of the presented finds lies, among other things, in the fact that it is possible to trace the context in which they existed - the general nature and dating of the settlements on which they were found have been largely clarified.

Their finds assemblage testifies to the presence among the inhabitants of representatives of the elite of the lower and middle levels. Probably, in this environment technologically simple, but few archangel pendants could circulate. Findings of this category of items on Vaigach Island testify to the possible connection of archangel pendants with the military environment. A review of finds assemblage with archangel pendants from the settlements of the Suzdal Opolye suggests the same connection, and for some settlements (Ivanovskoye 2) it can be documented through joint finds of pendants and weapons. Ivanovskoye 2 is the most short-lived settlement presented in the article. The most probable time of its life is the 12th century. The archangel pendant found here should be dated to this time, and together with it, three others, imprinted from one model.

7 FROM WALL TO TABLE- TABLEWARE FROM WALL PAINTINGS OF FINNISH MEDIEVAL STONE CHURCHES AS ARCHAEOLOGICAL FINDS

Abstract author(s): Varjo, Anu Sisko (University of Helsinki)

Abstract format: Oral

The wall paintings of Finnish medieval (1150-1523BC) stone churches have depicted religious motifs and biblical events, but the material world shown in them has been medieval. In Finland, the authors of paintings and the models of the pictures they use have been Central European, so it is interesting to examine whether Finnish churchgoers have seen the world of objects in their everyday material culture.

Finnish medieval material culture has been considered poor and scarce, but archaeological excavations in recent decades have changed perceptions of more significant objects. Tableware and cutlery, considered luxurious artefacts, are found in excavations of medieval village plots in rural areas. In my research, I have compared how the imported ceramics, glass breakers and table knives of the wall paintings of stone churches in the Uusimaa and Southwest Finland rural areas are visible in Finnish archaeological excavation findings, i.e., how familiar the objects visible in the wall of the church have been to the churchgoer.

So far, church wall paintings have been scarcely used in Finland as a source of archaeological research. The paintings need critical and careful analysis, as their original purpose has not been to document medieval material culture, and all the motifs do not necessarily correspond to medieval life. However, the wall paintings are an exciting source of archaeological research, as they provide additional information for archaeological finds on material and social culture.

8 AN INTERNATIONAL PERSPECTIVE ON MEDIEVAL SMALL FINDS IN HUNGARY

Abstract author(s): Rácz, Tibor (Ferenczy Museum Centre; Community Archaeology Association)

Abstract format: Oral

In 2015 a Community Archaeology Program has been launched boosting rescue and plan excavations as well as metal detector surveys in the central parts of Hungary. The scales and objectives of the program have been continuously expanding resulting in a huge collection of finds, comprising 10-12.000 non-coin medieval metal finds, a source base with yet barely exploited potential. The material calls for a systematic approach, a complex evaluation of the finds in the frames of a research project. The wide spectrum of objects allows us a multi-scale perspective on the material culture of medieval villages relating on several different aspects of utilization: daily routine of domestic activity, agricultural work, manufacturing, consumption habits or fashion. We can also identify production sites, trade networks and social patterns with the help of quality products.

Present paper concentrates on metal detector finds of a sample area discussing the interconnectedness of material culture on a pan-European scale. The objects were collected with the exact coordinates during controlled and well documented field surveys. The spread of finds will be highlighted with the application of geospatial methods. A plastic picture of the settlement network can be drawn at a regional level if we display the processed data on the map. With the quantitative analysis and taking into account the prestige objects, indicators of trade we can attempt to identify the central places and peripheral zones of the respective region. The hinterland of medieval towns, monasteries and forts will be clearly outlined with this methodology. The importance of the study lies in the fact that until now we had no archaeological data on the hierarchy of the medieval villages and market towns in Hungary.

9 THE SEEWINKEL IN THE EAST OF AUSTRIA - A CULTURAL LANDSCAPE AT A CROSSROADS

Abstract author(s): Perstling, Claudia (University of Innsbruck) - Özyurt, Jasmin (Austrian Academy of Sciences-Institute for Medieval Research) - Siegl, Kathrin (ÖAI Abteilung Altertumswissenschaften, Forschungsgruppe Numismatik) - Tobias, Bendeguz (Austrian Academy of Sciences-Institute for Medieval Research)

Abstract format: Oral

Recent developments in Austria show that an increasing number of historically significant sites and their information are being lost due to the intensification of agriculture and the search for archaeological finds using metal detectors. Agricultural equipment and the increased use of pesticides are destroying archaeological sites and remaining information in the form of small finds is disappearing into private collections. It is also likely that most of these finds will be lost or sold over the years. If this trend continues in the coming decades, it is expected that we will leave future generations with a cultural wasteland.

From a scientific point of view, the quality of information about archaeological sites is decisive. This means that we need accurate location information and a detailed description of an archaeological find. But what if these decisive information is missing? How can we steer uncontrolled collecting activities into scientific channels and how can we draw conclusions about archaeological finds without this information?

With the Seewinkel project in Austria, which is considered to be a particularly endangered area, an attempt is being made to work out a solution in cooperation with the Federal Office for the Protection of Monuments and the metal detector users on site to find out what small finds without archaeological context can tell us and what not.

158 DIGITAL DATA AND EARLY MEDIEVAL CARVED STONES: ACCESS, INTERPRETATION AND VISUALISATION

Session theme: 3. Heritage Narratives and Representations

Session organisers: Colbert, Kate (University of Galway) - Semple, Sarah (Durham University) - Kasten, Megan (University of Glasgow)

Session format: Regular session

The aim of this session is to both take stock and look forward. We reflect on recent advances in the recording and on-line publishing of databases/corpora of early medieval carved stones – which notably includes the Anglo-Saxon Corpus of Stone Sculpture and the database of Gotlandic Picture Stones – and look ahead to new advances with respect to these and other stone sculpture corpora, as well as additional national and international databases. These include the OG(H)AM project's digital cataloguing of all ogham inscribed stones and the Digital Atlas of Early Irish Carved Stones, as well as other projects working to establish full digital online databases/catalogues and facilitate a wide range of access and interpretation initiatives, not least in terms of digitising how stone sculptures originally looked (including the application of colour) and the nature of the historic environments they occupied. We are looking to bring together projects from across Europe that have or are working on visualisations and digital manipulations of early medieval sculpture to raise awareness of the material and encourage wider access to it and its historical, social roles. We are

interested especially in case studies where visual and digital work are setting and answering new research questions and enabling new directions in knowledge generation about early medieval sculptural outputs and artistic production. Such work is of course inter- and intra-disciplinary, and in response we are also looking to hear from collaborations involving archaeologists, museums, digital/computer specialists, art historians, anthropologists, etc. that bring data together on digital platforms and explore ways in which digital interpretations will and do enhance our understanding of that material and its users.

ABSTRACTS

1 GOTLAND'S PICTURE STONES - THE DIGITAL EDITION

Abstract author(s): Oehrl, Sigmund (Institutionen för arkeologi och antikens kultur, Stockholms universitet; Universitetet i Stavanger, Arkeologisk Museum)

Abstract format: Oral

Although much research on the Gotlandic picture stones has been carried out since the early 1940s, most of this research, by necessity, has been based on Sune Lindqvist's edition "Gotlands Bildsteine". However, 75 years after the publication of this book it is quite clear that Lindqvist's edition is outdated. Consequently, a new edition of all the Gotlandic picture stones is much needed. Secondly, all interpretations of the published picture stones and their images have been based on Lindqvist's painted pictures, that is on the fundamental perception of the shallow carved lines by a single scholar. Although Lindqvist was an excellent specialist, his perceptions of the images are sometimes doubtful and have been challenged several times. Consequently, a digital, more precise documentation of all the monuments is highly needed.

For these reasons, a new project has been started recently, financed by the Swedish Research Council, based at Stockholm University and Gotlands Fornsal, in order to create a new digital edition of the entire material. The project has three major aims: 1.) Digitization of the entire corpus of Gotland's picture stones, applying the most advanced 3D recording methods available, combining different technical approaches. 2.) Creating an interactive online edition of the picture stones, addressed to both the public and researchers, including the 3D data, digitised archival material, and detailed archaeological texts on each stone. 3.) New interpretations of the images based on the new digital documentation.

The paper will give an overview of previous research, main problems and new approaches of documenting and interpreting picture stones, clarifying the urgent need for a new, digital edition of the material, and outlining the future steps and goals of the new project.

2 THE FIRST LATIN INSCRIPTION MADE IN SWEDEN? GROOVE ANALYSIS OF THE KARLEVI RUNESTONE BY 3D-SCANNING AND MULTIVARIATE STATISTICS

Abstract author(s): Kitzler Åhfeldt, Laila (Swedish National Heritage Board)

Abstract format: Oral

The late 10th century AD Karlevi stone on the Baltic island Öland is one of the most enigmatic Viking-Age runestones in Sweden. The runic inscription tells that a Danish sea-lord has been buried on the island. It includes a long strophe formulated in the Old Norse verse meter dróttkvætt, a complicated art form aimed at an audience at the court. On the backside of the stone there is an inscription in Latin letters, interpreted as the misspelled beginning of the well-known prayer starting with "In nomine Jesus...". If this inscription is contemporary to the runes, this is the oldest known Latin inscription that with certainty has been produced within present Swedish area, as well as the oldest known Christian prayer in Scandinavia.

The problem is whether the Latin inscription is contemporary to the runic inscription, or if it has been added later. This has been investigated by groove analysis, i.e. analysis of the carving technique using 3D-scanning, the analysis tool Groove Measure and multivariate statistics.

This method has been applied in several research studies about Viking-Age rune-carvers, investigating issues concerned with mobility, contact patterns, identification of carvers, co-operation and authenticity. It shows how 3D-data can be used for sophisticated analysis of grooves and tool marks. The parameters can be adapted to other dimensions; thus the method is applicable on other artefacts and materials as well.

Results indicate that the runic inscription may have been carved by two individuals, one of whom also carved the Latin inscription. This carver might have been bilingual, e.g. a Scandinavian carver picking up some Latin or a not-so-learned priest, both options feasible in this region and time period.

3 **PICTURE THIS: 3D RECONSTRUCTIONS OF POLYCHROMED SCULPTURE IN BRITAIN**

Abstract author(s): Patrick, Jordyn (Durham University)

Abstract format: Oral

This paper will present a case study from ongoing research regarding polychromy and early medieval sculpture in Britain, CE 500-1100. Using a selection of data from the Anglo-Saxon Corpus of Stone Sculpture, the discussion will cover interdisciplinary methods used to digitise and analyse traces of pigments and other surface treatments.

From the Lichfield Angel to the Gosforth Cross, excavated finds and existing monuments in England now provide evidence that many of these monuments were painted and highly coloured. This medium has given people a way to express notions of place, memory, and identity and, in monumental form, offered a means of creating relationships between the local landscape and the people inhabiting it. Colour played a significant role in these monuments' aesthetics, composition, purpose, and visual impacts. As such, not only does this project aim to produce high-resolution 3D models of key sculptures but also to build a database of known paint traces and their composition along 3D reconstructions using these suggested pigment palettes.

4 **BUILDING A FRAMEWORK FOR RECORDING CARVED STONES IN IRELAND: STANDARDISATION AND ACCESSIBILITY**

Abstract author(s): Colbert, Kate (University of Galway)

Abstract format: Oral

The beautiful and intricate works of Insular art produced in the monasteries and churches of early medieval Ireland stand as testimony to the wealth, power and cosmopolitan nature of those ecclesiastical communities. Stone sculptures in particular reflect the artistic and technological innovations that characterised these milieux; yet despite the widespread distribution of carved stones dating to this period throughout many communities across Ireland, their full potential to shed light on key aspects of early medieval Irish society remains untapped, hindered by the absence of a systematic, island-wide survey of carved stones. The lack of such a corpus has thus far hampered our ability to draw comparisons between the Irish material and that from other regions of early medieval Europe. This not only limits our understanding of Irish carved stones in their wider context, but consequently, also impairs our capacity for knowledge generation and exchange within early medieval scholarship at a global level. Significant strides in tackling this issue are currently being made by projects such as the Digital Atlas of Early Irish Carved Stones (DAEICS), as well as the Early Medieval Irish Latinized Inscriptions (EMILI) project and the OG(H)AM project. However, due to the sheer volume of material, considerable work still remains to be done in the coverage of Irish sculpture. This paper will present ongoing work, undertaken in collaboration with key scholars across Ireland and abroad, including those associated with the aforementioned projects, in creating a guideline framework for the recording of Irish carved stones. Most importantly, this includes a comprehensive ontology that will ensure standardisation of terminology and make the data easily accessible, searchable and retrievable to researchers worldwide so that, in the medium term, the long-overdue work of building a cohesive island-wide corpus of Irish early medieval carved stones can begin.

5 **THE DIGITAL ATLAS OF EARLY IRISH CARVED STONES (DAEICS): ACCESS, VISUALISATION, INTERPRETATION**

Abstract author(s): Ó Riain, Diarmuid - Ó Carragáin, Tomás (University College Cork)

Abstract format: Oral

The Digital Atlas of Early Irish Carved Stones (DAEICS) is a new collaboration between University College Cork and Queens University Belfast funded by an Irish Research Council Coalesce INSTAR+ award. This paper will introduce the project and present some initial results. The project aims to contribute to a step-change in both the academic understanding and public appreciation of carved stone monuments of late prehistoric and early medieval date (c. AD 1-1200). Existing records by the Irish National Monuments Service (NMS) and the Northern Irish Historic Environment Division (NIHED) are being integrated and enriched, drawing on the results of recent research to add new layers of standardised data in ArcGIS. Rather than an exhaustive survey, key attributes are being recorded which will allow researchers to visualise and analyse the most important variables in form, design, resource investment, and chronology across the island for the first time. DAEICS therefore complements in-depth work on specific regions and monument types – such as the Og(h)am project – and will be a critical enabler of targeted research. This is being demonstrated by using the atlas to facilitate and inform detailed studies of outstanding collections centred on Armagh, Clonmacnoise, and Iveragh. These case studies are being undertaken in collaboration with community groups. Through training in digital recording techniques, members of the public are making an enduring contribution to the study of carved stones in their local area.

COASTAL ARCHAEOLOGY IN SMALL ISLANDS: RESEARCH PERCEPTIONS, BIASES, METHODS AND APPROACHES

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: de Waal, Maaïke (Field Research Education Centre, Faculty of Archaeology, Leiden University) - Gal, Emily - Rennell, Rebecca (Archaeology Institute, University of the Highlands and Islands)

Session format: Regular session

In many small islands, isles and islets prehistoric communities relied heavily on the exploitation of coastal resources, resulting in a coastal subsistence focus and a large number of coastal sites. This has several interesting implications. We will focus on two major topics that are largely methods and approaches based.

1) Today, small islands are often perceived as remote, isolated locations. This has caused research biases favouring less 'remote' locations, as well as site functions erroneously being interpreted. The richness of the archaeological record in small island coastal settings, however, demonstrates that our current perceptions of what is remote, marginal, isolated or uninhabitable, do not mirror prehistoric perceptions. How far-reaching are these biases, and how can we challenge or combat them?

2) Coastal processes, accelerated by climate change, also endanger site survival. Therefore, protection of exposed cultural heritage is needed, and mapping and rescue excavations are urgent, although often complicated by limited resources and limited accessibility of terrains. Another complication of this site survival issue is that we do not really know what prehistoric settlement locations and settlement patterns looked like. It is essential to establish what (and how much) information we miss when it comes to coastal prehistoric, occupation. How can we fill in the blanks?

This session crosses disciplinary, chronological and geographical boundaries (not limited to Europe) to generate synergizing discussions on the above-mentioned particularities of investigating small island coastal landscapes. We welcome contributions dealing with practical archaeology research aspects relating to above-mentioned topics, as well as experiential, reflective presentations.

ABSTRACTS

1 AT HOME IN OUR SEA OF ISLANDS: THE ARCHAEOLOGY OF BOUNDLESS OCEANS

Abstract author(s): Walker Vadillo, Veronica - Ilves, Kristin (University of Helsinki)

Abstract format: Oral

Smallness is a state of mind. With these words, the Polynesian scholar Epeli Hau'ofa challenged the widely extended notion that islands are small, remote, isolated, and peripheral. Instead, he proposed we "focus on the holistic perspective in which things are seen in the totality of their relationships" (1994: 152). This understanding of islands as connected features on a vast blanket of water has its origin in the sea and emerges as a perfect example of what Christer Westerdahl called the Maritime Cultural Landscape (1992). The biases in perceptions that islands are small, remote, and isolated likely stem from comparative associations with continental expansions, the research approach firmly grounded in terrestrial approaches. This view excludes the sea and the knowledge and technology developed by maritime communities to expand their worlds beyond land, thus perpetuating the idea of "island smallness". Where Europeans used names like Finisterre (the end of the land) for geographic features and constructed myths of "Here be dragons", the Austronesians launched the greatest human expansion by sea, navigating across two Oceans from Madagascar to Rapa Nui. Despite these well-known migrations, the field of island archaeology has yet to fruitfully incorporate concepts like the MCL and non-Western perceptions of island identities. In this presentation we review the current state-of-the-art in island archaeology and examine theoretical trends through a systematic analysis of the *Journal of Island and Coastal Archaeology*. Especial attention will be given to the way in which the journal engages with maritime archaeology theory, and to what extent non-Western perceptions of islands are incorporated into interpretations. The presentation will then explore ways to contest and combat prevalent ideas of remoteness and isolation in the study of islands by bridging the fields of maritime and island archaeology, as well as highlighting the importance of non-Western epistemologies for our research.

2 COASTAL ARCHAEOLOGY IN SMALL CARIBBEAN ISLANDS: RESEARCH PERCEPTIONS AND BIASES IN LA DÉsirADE AND PETITE TERRE (FRENCH WEST INDIES)

Abstract author(s): de Waal, Maaïke (Faculty of Archaeology, Leiden University)

Abstract format: Oral

This paper focuses on challenges related to coastal archaeology in small Caribbean islands, based on case-studies carried out in La Désirade (20 km²) and the two islands of Les îles de la Petite Terre (together ca. 1.5 km²).

Two different type of challenges will be addressed:

1) The complications in (re)constructing representative site distribution maps to allow the creation of diachronic landscape biographies, as result of coastal dynamics (often including, but not being limited to, coastal erosion) and limited accessibility of the shorelines involved. Limited accessibility can be linked to the fact that many coastal areas represent vulnerable island fringes. Often, they are also protected as such. Excavation activities that might be expected to weaken the solidness of coastal areas are never really welcomed in areas that are already susceptible to natural destruction. In addition, coastal areas may also be protected due to the presence of nesting areas (birds and turtles) and of natural reserves.

2) The presentation will also discuss difficulties encountered to provide accurate site interpretations as result of perception biases related to supposed remoteness and limited island size.

By taking archaeological fieldwork and analyses from La Désirade and Petite Terre as examples, the paper will focus on the effects of these challenges, and will discuss ways to deal with those.

3 **SMALL ISLANDS IN A SMALL GULF: EXAMINING INSULARITY BIASES IN THE CONTEXT OF THE GULF OF FONSECA (CENTRAL AMERICA)**

Abstract author(s): Kolbenstetter, Marie (Leiden University; Université Paris-Nanterre) - Thakar, Heather (Texas A&M) - Elvir, Wilmer (Universidad Nacional Autónoma de Honduras)

Abstract format: Oral

El Tigre is one of the 34 small islands within the Gulf of Fonseca, on the Pacific Coast of Central America. The Gulfs' dimensions, at its longest and widest point, do not exceed 75 km by 55 km. El Tigre is only separated from the next island over, from which the mainland can be reached, by a 2 km strait. Do conceptions of insular territories have relevance for islands and archipelagos within such close proximity to the mainland?

We propose to examine how territory is constructed among modern and precolonial island communities of the Gulf of Fonseca. Using ethnographic, archaeological, malacological and isotopic data, we investigate how daily practices shape the integration of the mainland coastlines and other small islands to the insular communities' perceived territory. We will explore how environments popularly viewed as "inhospitable", such as the mangrove swamps lining the mainland, have been integral to insular life on El Tigre from precolonial to modern times. Indeed, from fishing, to mollusk collection, to salt-making and harvesting of timber, the entanglement with these complex ecologies runs deep. Reviewing ethnographic data can then allow us to propose social nodes within the landscape of the Gulf of Fonseca, where fishermen and mollusk collectors effectively broker inter-community relations. Understanding the short-distance mobility patterns associated with subsistence practices can then provide insight into the construction of social landscapes past and present within the Gulf of Fonseca.

4 **EXPLORATION OF DIMINUTIVE SPACES: THE CONNECTED ISOLATION OF MICRONESIAN ISLANDS**

Abstract author(s): Fitzpatrick, Scott (University of Oregon)

Abstract format: Oral

On a global scale there is nowhere else in the world where islands were colonized by humans over such a remote and isolated seascape. The vastness of Remote Oceania is astonishing, covering more than 65 million square kilometers, or roughly equal to the area of Asia, Europe, and the United States combined. Yet more than 3000 years ago, peoples in the Pacific reached these islands using a combination of sophisticated watercraft, wayfinding techniques—including a celestial compass—and sailing strategies passed down orally through rote learning across generations. Over the course of 2000+ years, different groups settled islands in Melanesia, Polynesia, and Micronesia, representing the most rapid and expansive diaspora in human history. The latter region, however, stands out as exemplary in terms of how and when smaller islands were settled. The western margins of Palau and the Marianas were first colonized coeval with the famous Lapita migration ca. 3300–3000 BP while numerous high islands and atolls were later settled by around 2000 BP, centuries before those in East Polynesia such as Hawaii, Aotearoa New Zealand, and Rapa Nui. In this paper I discuss the historical contingencies that have led to cases of relative isolation on some islands in Micronesia through time while in others extensive exchange systems developed to help ensure survival, biological diversity, and the acquisition of desired or needed resources. The settlement of Micronesia represents environmental adaptation par excellence, though the irony is that years of colonial rule and globalization—coupled with climate change—have in some ways led to a greater degree of marginalization, disconnections from traditional lifeways, challenges to conducting archaeological research, and prospects of eventual island abandonment.

5 THE RELEVANCE OF 'FAR-FLUNG' ISLAND LANDSCAPES IN PREHISTORIC SCOTLAND

Abstract author(s): Mom, Vincent (Digital Preservation Projects) - Higginbottom, Gail (INCIPIT - Consejo Superior de Investigaciones Cientificas-CSIC)

Abstract format: Oral

This paper investigates some of the megalithic landscapes of the islands of western and northern Scotland as part of ongoing research into these regions. The richness and density of the archaeological records of these regions, in terms of likely ritual as well as settlement landscapes, is becoming clearer with each passing year, pushing back against the ideas of isolation and uninhabitability during the Late Neolithic at least. Thus, we see a re-assigning from the oft undeserved notion of 'lower' status, to relevant and informative. Using locational and visual 2D and 3D GIS analyses, this work shows how we can comprehend the level of relevance of island and coastal landscapes to the prehistoric people that inhabited them, as well as uncover what these perceptions might be. This new work looks at monuments around Loch Roag in the west and the isles of Rousay and Shetland in the North. Specifically, it examines the visual connections between monuments and their surroundings. This current work expands either the methods or/and data of the previous works using high resolution elevation data of the areas as well as the most recently upgraded versions of software available for the creation of 3D-landscape panoramas and the immersion technology for the investigation of cultural astronomical landscapes. This work enriches our knowledge on two levels: for instance - it cements the idea that 'far-flung' places like the west of Lewis, actually centralise and typify ritualised knowledge and that the isle of Rousay tombs were far more complex in their ideology than previously understood. Thus, to some extent, the perceptions of these tombs creators have not been interpreted correctly, nor their 'functions' fully comprehended. Ultimately, this presentation uncovers some of the complexity and critical salience these island sites had in the Neolithic of Scotland.

6 CONNECTING THE ISLANDSCAPE. COASTAL NAVIGATION DURING THE MIDDLE AND LATE BRONZE AGE ACROSS THE BALEARIC ARCHIPELAGO

Abstract author(s): Galmes Alba, Alejandra (University of Balearic Islands INCIPIT - CSIC) - Calvo Trias, Manuel (University of Balearic Islands)

Abstract format: Oral

Across the Balearic Islands, during the Middle and Late Bronze Age, there are several archaeological indicators that show a high degree of connectivity between the islands, as well as with the mainland. This phenomenon can be traced through foreign materials, but also through shared practices, habitus, and objects across the islands. However, coastal sites have not been related to maritime mobility practices until recently.

In this presentation we want to analyse the maritime mobility practices that enabled and supported such connectivity. For that, and through a range of GIS-analysis we aimed to assess the role of a group of sites located along the islands' coastline, to understand if they could be related to coastal navigation dynamics. By focusing on the visibility and prominence of these sites during navigation we wanted to understand if their location could have enabled to be used as landmarks, and to be used as infrastructures that aided coastal navigation.

All in all, we aim to challenge the idea of islands as isolated and instead understand islands and connectivity from an islander's perspective. How, by understanding connectivity we can challenge the preconceptions about islands, and how we can look beyond, to the islandscape, or even the aquapelago, to see how the sea was an integral part of their landscape, practices, and even played a role in the construction of an insular identity, not necessarily through isolation.

7 ISOLATION & ISOTOPIC ANALYSIS IN HEBRIDEAN PREHISTORY

Abstract author(s): MacLean, Mairi (SUERC)

Abstract format: Oral

The idea that the islands are remote or isolated has become entirely normalised in Western society. This is true of how much of Britain views many of its archipelagos, such as the Hebrides, found along the west coast of Scotland (Morgan 1998, 20; Wright 2008, 61; McDonald 2008, 152; McCutcheon 2008, 1). Modern Hebrideans themselves are often discussed in terms of being static, unmoving, and old-fashioned. This perception is frequently extended back through history, impacting our understanding of Hebridean prehistory - despite the surrounding waters frequently being described as a 'sea highway'. Much of this has deep roots in Scottish history, with particular connections to social perceptions of Gaels (the Gaelic speaking cultural group typically identified as Scottish Highlanders) and to later 18th and 19th century colonial attitudes towards Pacific Islanders (Hau'ofa 1994). These very modern biases have a natural influence on the way researchers approach the archaeology of island populations and consider the data for their movements.

Using isotopic analysis to determine whether Hebridean populations show evidence of mobility between island groups and/or the mainland, this paper will present the results of sulfur analysis on Neolithic and Bronze Age remains. Along

with an interpretation of prehistoric population mobility based on these results, this paper will also discuss the implications for how we understand prehistoric Hebridean populations. In particular, it will consider how this interpretation challenges the pervasive narrative that the Hebrides are remote, isolated, and culturally static.

8 PROJECT SENTINELA: MONITORING AND DOCUMENTING THE EROSION PROCESSES ON THE CULTURAL HERITAGE OF THE GALICIAN ATLANTIC ISLANDS

Abstract author(s): Valle Abad, Patricia (Universidade de Vigo; Austrian Archaeological Institute - Athens) - Fernández Fernández, Adolfo (Universidade de Vigo) - Rodríguez Novoa, Alba (Universidade de Vigo; Aarhus University) - Lago Cerviño, Marta (Universidade de Vigo)

Abstract format: Oral

The Atlantic Islands of Galicia (Spain) preserve an important natural heritage, being the reserve of some representative ecosystems of the Atlantic continental platform. Declared National Park in 2002, they also count with a remarkable but less known cultural heritage, with a considerable number of sites on the coast. Over centuries and especially in the last decade, the integrity and preservation of these sites have been compromised, due to the erosive processes of the tides and extreme climatic events.

Project SENTINELA (funded by the Ministry of Environmental Transition and the Demographic Challenge of the Government of Spain) emerges with the aim of improving the knowledge about the human occupation of the Atlantic Islands throughout history and determining the impact of the sea variations and climatic changes on the preservation of their cultural heritage. Therefore, we developed a series of protocols and procedures that will allow the identification, characterization, evaluation, measurement and prediction of the degradation agents that affect the archaeological sites. This data will help the administration of the National Park to improve the management of their cultural heritage and ease the decision-making process about the rescue actions or measures that are necessary to preserve the sites. Furthermore, a higher knowledge of the cultural heritage of the islands will add new values to the National Park, improving the understanding of its evolution.

As SENTINELA began in January of 2022 and is still in process, we will show the project, its first results, as well as a first draft of the protocols followed to gather information, the problems the project faced in the first months of implementation and the expected outcomes.

9 CARIBBEAN ARCHAEOLOGICAL SITES AND NATURAL AND HUMAN INDUCED HAZARDS FROM PAST TO PRESENT: IMPACTS, LOSS AND RESPONSES

Abstract author(s): Kelly, Harold (KITLV; Leiden University) - Richards, Andrea (Leiden University) - Hofman, Corinne - Hoogland, Menno (KITLV; Leiden University)

Abstract format: Oral

Paleo climatic research in the Caribbean has provided evidence of significant climatic variations throughout the mid to late Holocene, impacting not only the environment, but also communities and their survival since their earliest occupation of the region, 7500 years ago. Centuries-long wet conditions alternated with drier cycles contributed to a long-term trend of relative sea level rise and extreme weather events. These alternating periods of extremely wet and dry conditions, drought, tropical cyclones, extreme wave events and storm surges, flooding, and sea level rise, would have undoubtedly severely impacted the insular inhabitants of the region and their settlements, especially those located along coastal areas. Through this presentation, evidence of these environmental impacts on people and places will be highlighted through case studies from selected islands in the region. Identified examples will not only highlight the impact of climatic challenges in the past, which led to varying threats to coastal sites and attending responses, but will also illustrate the effects of natural hazards and human interference currently on coastal archaeological sites.

10 SEA-LEVEL AND SITE LOSS: PREDICTIVE MODELS OF CLIMATE CHANGE ON COASTAL CULTURAL RESOURCES

Abstract author(s): VanderVeen, James (Indiana University)

Abstract format: Oral

The worldwide historic preservation community has expressed serious concerns over the threat of global climate change to the archaeological and historic record. The damage to, or complete loss of, archaeological sites on the small islands of the Florida Keys demonstrate the story of rising seas better than most places. On these low islands, with 90% of the land mass at 1.5 meters (5 feet) above sea level or less, minor fluctuations in sea level have been shown to have significant effects on shoreline movement and human settlement in the past. The increasing frequency of destructive weather events and a growing body of evidence indicates sea levels will rise appreciably over the next several centuries. Sea level along the coast of the Gulf of Mexico and in the Caribbean Ocean is projected to rise, on average,

0.25 - 0.30 meters (10 - 12 inches) in the next 30 years (2020 - 2050), which will be as much as the rise measured over the last 100 years (1920 - 2020). Immediate actions must be taken because the damage is observable at the present. In the Keys, more than twice the documented archaeological sites have already been lost to erosion and sea level rise than to construction and development. Linked database development across large regional scales, like that done by the Digital Index of North American Archaeology, and more local-scale ground-truthing projects, such as those recently conducted by the Florida Public Archaeology Network, can be used to target areas for mitigation. Positive change can come from open-access data sharing, citizen-based programs, and regular monitoring can direct preservation actions similar to that being done to save economically valuable coastlines.

11 DRONE-BASED SURVEY TO MAP CLIMATE CHANGE IMPACTS ON ERODING ISLAND HERITAGE

Abstract author(s): Graham, Ellie (University of Aberdeen)

Abstract format: Oral

Scotland has a rich legacy of archaeological sites around its coastlines and islands. Much of this heritage is under threat from coastal processes accelerated by climate change. Previous work has shown that hundreds of sites are archaeologically significant, threatened by erosion and highly valued by the local coastal communities; many of the most vulnerable are located on island coastlines. Sites need regular monitoring, while the scale of the issue outstrips available resources, so prioritisation is required, and management strategies need to be informed by robust, up to date data. The paper will present ongoing PhD research to carry out refined-scale coastal change analysis and vulnerability assessment for a network of sites around the north isles of Scotland. A combination of drone and ground survey is used to gather high-resolution 3D data from which the current coast edge is mapped as the basis of erosion assessment. Results provide up to date records of condition for individual sites, and the high-resolution monitoring data needed by archaeologists and coastal managers. Case studies are focused on prehistoric settlement sites which are known to be urgently threatened, so the surveys will improve understanding of the patterns of prehistoric settlements in these areas. The results also transform these sites into a network of nodal observation points distributed around the islands where the impacts of erosion are closely and accurately recorded to inform understanding of climate-driven coastal change on archaeological sites and the coast more widely. The site-scale vulnerability assessment also informs planning and prioritisation for future work on threatened sites.

12 INTEGRATED ARCHAEOLOGICAL INVESTIGATION OF A MARITIME TERRITORY. HABITATION AND CONNECTIVITY IN THE SMALL CYCLADES ARCHIPELAGO, GREECE

Abstract author(s): Boyd, Michael (Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute; McDonald Institute for Archaeological Research, University of Cambridge) - Hilditch, Jill (University of Amsterdam) - Wright, Joshua (University of Aberdeen) - Brodie, Neil (University of Oxford) - Gkouma, Myrsini (Malcolm H. Wiener Laboratory for Archaeological Science, American School of Classical Studies at Athens; The Cyprus Institute) - Margaritis, Evi (Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute) - Gavalas, Giorgos - Legaki, Irini - Athanasoulis, Demetris (Ephorate of Antiquities of Cyclades, Hellenic Ministry of Culture and Sports) - Renfrew, Colin (McDonald Institute for Archaeological Research, University of Cambridge)

Abstract format: Oral

In the centre of the Aegean, the mini-archipelago of the Small Cyclades is formed of six islands and a number of smaller islets set between the much larger islands of Naxos, Amorgos and Ios. Prior to recent systematic examination, the archaeology of the area was known principally through occasional rescue or scientific work, mainly on cemeteries, and the looting of sites such as Kavos on Keros.

Large-scale investigation of the site complex at Dhaskalio and Kavos, at the western end of the today uninhabited island of Keros, revealed a third millennium BCE site of unexpected complexity, full of evidence for a high degree of connectivity. In order to understand the roles of the site in its wider seascape, surface surveys were carried out on the island of Keros, on nearby Kato Kouphonisi, and in the southeast part of the neighbouring large island of Naxos, thereby sampling the neighbouring coastal and inland settlement patterns and resource exploitation on different land-mass scales. Small scale test trenches were also opened on Keros to test survey results and to understand long-term changes in land use.

This comprehensive data set allows us to investigate changes in settlement and land use over time, especially in relation to the development and decline of the large site at Dhaskalio and Kavos; to understand the distribution of labour and investment in the landscape in relation to marginality and the role of connectivity in creating a distributed mode of settlement; and to set longer term changes against evidence for soil erosion and climate change.

This paper examines the affordances of small island groups in a prehistoric setting and challenges our notions of marginality versus the evidence for inventive and intensive inhabitation gathered by modern field survey techniques.

OF SWAMP AND SAND: COASTAL AND ISLAND ARCHAEOLOGY IN NORTH FRISIA, GERMANY

Abstract author(s): Blankenfeldt, Ruth (Zentrum für Baltische u. Skandinavische Archäologie, Schloss Gottorf) - Klooß, Stefanie (Archäologisches Landesamt Schleswig-Holstein) - Majchczack, Bente Sven (Christian-Albrechts-Universität zu Kiel; ROOTS Cluster of Excellence) - Hadler, Hanna (Johannes Gutenberg-Universität Mainz) - Unglaub, Christoph (Archäologisches Landesamt Schleswig-Holstein) - Wilken, Dennis (Christian-Albrechts-Universität zu Kiel) - Bienen-Scholt, Dirk (Archäologisches Landesamt Schleswig-Holstein)

Abstract format: Oral

The coast of North Frisia, Germany – today protected as UNESCO Wadden Sea World Heritage – was repeatedly subject to major geomorphological changes. Large parts were swampy and uninhabitable for centuries or even millennia. Other hard-won and laboriously cultivated areas sank during heavy storms. They are preserved under today's tidal flat surface and can be mapped with modern, non-invasive methods. However, low tides limit the daily accessibility of the area, which can be difficult to walk on. In addition, observations of threats to these cultural layers by coastal processes and climate change is still in an early stage.

Since the last ice age, so-called geest cores have stood out from this unsteady landscape. They were the only permanently dry areas from which today's North Frisian Islands were formed by the deposition of marine sediments. Already inhabited since the Neolithic, larger settlement groups are to be expected here from the turn of eras. Special preservation conditions provide archaeologists with an increasingly differentiated image of the island communities, which has long been regarded as isolated people in barren landscapes.

For example, on the western side of the island of Amrum, a wide belt of dunes developed in recent times, which has outstandingly preserved sites on the coast and in the immediate vicinity by covering them with sand. But if these features are blown free, they lie unprotected in the landscape. This has resulted in smaller (rescue) excavations, which have documented, among others, trading sites that were evidently used seasonally, as well as more extensive settlement features in the dune valleys.

The lecture aims to present and discuss the aspects addressed here: methodology in fieldwork, archaeological interpretation, conservation and natural challenges

BUILDING UNDER AND ABOVE GROUND DURING EUROPEAN NEOLITHIC

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Porqueddu, Marie-Elise (École des hautes études hispaniques et ibériques, Casa de Velázquez) - Le Roy, Mélie (Department of Archaeology and Anthropology, Bournemouth University) - Ard, Vincent (CNRS - UMR 5608 TRACES, Université Toulouse Jean Jaurès)

Session format: Regular session

Starting around the fifth millennium BC, the Neolithic period is marked over time by the emergence of monumental funerary structures across Europe. These burials either take place in natural environments (caves, shelters, etc.) or are artificially constructed (dolmens, hypogea, etc.). The funerary practices in use are gradually evolving from single deposits to collective burial sites, the latter becomes the main practice at the end of the Neolithic. All these structures have in common a strong impact on the landscape, whether underground or aboveground. The choice of architecture and materials may reflect specific environmental and geological contexts. Nevertheless, various geographical areas display a high density and variability of this type of tombs demonstrating that environment is only one of several explanatory factors.

At a regional scale, several questions arise on the anthropological, socio-cultural, and structural levels from the presence of this wide diversity of places to bury the dead. Do these different funerary expressions reflect an individual's different social and/or symbolic status within the same community? Alternatively, do these different types of structures illustrate distinct human communities? Other scenarios can also be formulated concerning the diversity of funerary architectures within a territory, such as the impact of architectural traditions and their evolution, or the incorporation into funerary practices of new behaviours linked to contacts with other human groups. In order to assess the evolution of these practices over time, a high-resolution chronology must be established.

This session aims to gather Neolithic case studies from across Europe and its surroundings to discuss the archaeological evidence for the world of the dead (anthropological, architectural, typo-chronological, etc.) to identify and define the determining factors, whether socio-cultural, environmental and/or technical, that had an impact on the architectural choices of human groups to establish aboveground or underground burials.

1 NEOLITHIC RONDELS AND EARTHEN LONG BARROWS. A CASE STUDY OF THE MONUMENTAL LANDSCAPE FROM THE SOUTH-WESTERN PART OF POLAND

Abstract author(s): Przybyl, Agnieszka (University of Wrocław)

Abstract format: Oral

In 2022, in the neighborhood of the Muszkowice Forest, in south-western Poland, three circular ditched enclosures were discovered. The area around the village of Muszkowice was previously known for the presence of numerous pre-historic and early medieval barrow cemeteries. Now, the early Neolithic monumental constructions have completed the picture of this sacred landscape.

The discovery was made possible thanks to the involvement of fascinators and seekers of archaeological curiosities. They used satellite images made available on the internet, taken in the exceptionally dry year of 2018. With the cropmarks visible, they noticed huge concentric circles in these images. In that rather surprising way, the discovery demonstrates still the considerable potential inherent in archaeological landscape research in Poland.

In my presentation, I focus on this particular example of the monumental landscape from Muszkowice, with different, ritual and funeral, Neolithic structures co-occurrence in one common area. It shows that even for a relatively well-studied territory, the use of modern observational methods can still provide us with surprising information to supplement our knowledge of archaeological heritage and past landscapes.

The studies presented were partially conducted with the financial support of the National Science Centre, research project No. 2017/25/B/HS3/01442.

2 FROM THE VISIBLE TO THE HIDDEN: DIVERSITY AND EVOLUTION OF FUNERARY ARCHITECTURE IN SOUTHWESTERN FRANCE DURING THE NEOLITHIC

Abstract author(s): Ard, Vincent (CNRS - DR14)

Abstract format: Oral

The south-west of France is an excellent laboratory for studying funerary practices at the end of the Neolithic period, during the 4th and 3rd millennia BC. Among the many practices that coexist, the two main ones oppose the visible and the hidden: open-air burials, symbolised by megalithic tombs, and underground burials, symbolised by sepulchral caves. Generally associated with the monumentalisation of landscapes, the history and visibility of megalithic architecture can be more complex. The evidence of dynamic phasing during recent excavations allows us to follow the evolution of the architecture from their construction to their condemnation. This communication will be the occasion to present the results of research in progress on the limestone causses of Quercy where an original process of condemnation of the monuments has been highlighted. The megalithic tombs then pass from the visible to the hidden. This process inevitably raises the question of the status of the buried and their memory among the living world.

3 LONG BARROWS AS IDENTITY LANDMARKS IN RITUAL LANDSCAPE OF BOHEMIA

Abstract author(s): Turek, Jan (Charles University) - Křišťuf, Petr (University of West Bohemia in Pilsen)

Abstract format: Oral

Late Neolithic long barrows of 5th and 4th millennia BC are found in many regions of western and central Europe, and southern Scandinavia. Despite their formal and constructional similarities, their symbolic meaning was perhaps more regionally variable. In some regions they served mainly as funerary monuments and elements of monumental landscapes. Other communities were using long barrows as ancestral sanctuaries structuring ceremonial landscapes and community areas.

Our current research project suggested that the long barrows in Bohemia are of different forms and constructions, but despite their formal variability, all served for burial of a single individual, while majority of the population was buried elsewhere. The alternative funerary sites can be found within ditch enclosures perhaps maintained funerary function for whole community or perhaps even several communities. Some people were also buried in sunken pits of habitation areas. From this point of view we need to perceive whole ritual landscape as a complex seen of funerary ritual and social interaction. The single burial long barrows of Michelsberg/Funnel Beaker Culture perhaps represent ancestral monuments reaching beyond purely familial ties. They were gaining further importance as shrines shaping regional identity and artefactual memory in landscape. Even centuries and millennia later were these sites reused for sacrificial and funerary purposes.

4 WHY CHOOSING? THE „MIXED“ ARCHITECTURES OF THE WESTERN MEDITERRANEAN

Abstract author(s): Porqueddu, Marie-Elise (École des hautes études hispaniques et ibériques, Casa de Velázquez)

Abstract format: Oral

During the Neolithic, two major architectural traditions for funerary monuments emerged: megaliths and hypogea. Both use the same material, i.e., the rock. While megalithic architecture presents the use of stones to build above ground, hypogea are cavities created by the removal of the rock. These two phenomena come into contact in different places in the Mediterranean, but also architecturally. Indeed, monuments can have both megalithic and rock-cut elements. They can be qualified as mixed or hybrid.

These monuments may have a rock-cut burial chamber and a megalithic access corridor, or a lower part carved in the rock and a cover of megalithic slabs, as is the case for the necropolis of Arles-Fontvieille in France. This combination of megalithic elements with rock-cut elements can be part of the initial architectural project of the monument as well as being the result of new interventions over time.

This paper aims to explore these original architectural proposals by offering a census of the different architectural forms known in the western Mediterranean at the end of the Neolithic, but above all by proposing a technical and architectural analysis of these structures.

5 TO BUILD OR TO UTILIZE: FUNERARY ARCHITECTURE VARIABILITY DURING THE 4TH AND 3RD MILLENNIA BCE IN TORRES VEDRAS (WESTERN PORTUGAL)

Abstract author(s): van Calker, Daniel (UNIARQ - Centre for Archaeology of the University of Lisbon)

Abstract format: Oral

The Portuguese Estremadura plays a fundamental role on the understanding of funerary Megalithism in the western-most part of the Iberian Peninsula during the 4th and 3rd millennia BCE. In this region, the Megalithic phenomenon is characterized by a significant number of sepulchers, with diverse death-related architectures, both built and natural. It presents a super-structural character (Sherrat, 1995), whose ideology and symbolism are independent from the burial space/typology in which they occur: in that sense, Megalithism is defined as a “complex set of magical-religious practices related to death (...) and not just as a type of funerary architecture” (Gonçalves, 2003), of which the cave-necropolis are an important part.

Geologically, this region is marked by the Jurassic and Cretaceous Limestone Massifs where several karst cavities with Late Prehistory funerary occupations are documented. Through the selection of a subregion as a case-study – Torres Vedras, about 50 km NW of Lisbon – we intend to discuss whether geological determinism is decisive for the choice of funerary architecture by the neolithic and chalcolithic communities of this territory. This archaeological reality is relevant for this argument, since it displays a large diversity regarding the typology of burials (such as caves, hypogea and tholoi), especially when compared to other areas of Estremadura, where natural caves are clearly predominant, revealing its “ready-to-use” character. Considering the widespread availability of these natural spaces, it is important to understand this multiplicity of funerary solutions both in time and space, assessing sociocultural aspects that can be acquired through the study of the inhumed populations and the analysis of the votive record.

GONÇALVES, V.S. (2003) – Sítios, “Horizontes” e Artefactos. Cascais. 2nd edition, 380p.

SHERRATT, A.(1995) – Instruments of Conversion? The Role of Megaliths in the Mesolithic/Neolithic Transition in Northwest Europe. Oxford Journal of Archaeology. Oxford: Blackwell Publishers Ltd. 14: 3, pp.245-260.

6 THE AVEN JANNA (SAINT-PRIVAT-DE-CHAMPCLOS, GARD, FRANCE): A COLLECTIVE BURIAL SITE FROM THE EARLY BRONZE AGE

Abstract author(s): Le Roy, melie (Bournemouth university) - Recchia Quiniou, Johanna (Paleotime) - Bertrand, Aurore (independant) - Chateauneuf, Florent (INRAP) - Chen, Agathe (Hades) - Hutinet, Kevin (independant)

Abstract format: Oral

Found in 2014, the cave “Aven Janna” presented an untouched collective burial site dated from the early Bronze Age. Since 2017, an excavation takes place, yielding the very first data on funerary practices for the region and the period.

The cave is located alongside the river Cèze, in the south of France, inside a 12km long gorges, where hundreds of cavities were found, showing for most of them archaeological occupation phases from the end of the Neolithic to the early Bronze age. Even though, numerous other burials sites are known, the “Aven Janna” is the first where data can be analysed from the field to the lab. The site presents a collective burial site welcoming a small number of individuals (n=9) with a very poor health status. Indeed, two of them present symptoms of tuberculosis. In addition to the human remains, numerous ceramic sherds and pots were found directly associated with the funerary deposit, fully taking part in the funerary practice. Finally, a collapsed dry stone construction within the cave appears to take part of the burial site management.

These first data demonstrate a more complex situation than just an occupation of the underground space. As well as in megalithic constructions, people from the early Bronze Age built and organised the space to deposit their dead. This suggests an importation of exogenous material and a planification of the building project. These new findings led to a reassessment of the previous finds in the region, revealing that the example of the “Aven Janna” is not unique and demonstrates a regional tradition for which numerous parallels can be drawn with the megalith constructions present in a close by area.

7 A MEGALITHIC PROVINCE NOT SO DIFFERENT: NORTHWESTERN IBERIA

Abstract author(s): Paulos-Bravo, Rodrigo (Complutense University of Madrid) - Ayán Vila, Xurxo (Contemporary History Institute. Universidade Nova of Lisbon)

Abstract format: Oral

Traditionally, it has been considered that the megalithic manifestations in the NW of the Iberian Peninsula were much less rich in their forms than those of other Atlantic provinces where the megalithic phenomenon reaches a remarkable polymorphism. Despite the fact that burial barrows are really numerous along the Atlantic coast of Iberia, there was little or no knowledge of the rest of the megalithic manifestations until now. However, in recent years, some structures have been documented whose morphology equals, to some extent, the prolific variety of megalithic forms in the north Atlantic, especially between the 4th and 3rd millennium BC. All this entails a change in the interpretation of the landscape that Neolithic societies loaded with meaning.

Stone and timber circles, cairns, menhirs and henges are increasingly common elements in the northwestern megalithic landscape of the Iberian Peninsula, but their interpretation has not yet reached the depth of studies carried out in other areas such as Ireland, Great Britain or the west coast of France. Including these manifestations within the studies of the Neolithic societies of southern Europe can open the way to new interpretations that allow a more precise approach to these early farmers and herders. What does seem clear is that, despite their regional differences, there is a much more homogeneous phenomenon in their forms than previously thought in northwestern Iberia, in particular during the late Neolithic period. Now it is important to analyze whether this apparent coherence in the forms also reflects a coincidence in their symbolic and functional meaning or, rather, a reinterpretation of these.

8 MEGALITHSCAPES: COMMON PATTERNS IN THE EXPERIENCE OF ARCHITECTURE. NEW RESEARCH IN THE MEGALITHIC NECROPOLIS OF BARBANZA (GALICIA, SPAIN)

Abstract author(s): Verdonkschot, Jadranka - Criado-Boado, Felipe (XSCAPE Project on “Material Minds” - ERC 2020 Synergy Grant 951631; Institute of Heritage Sciences - Incipit, Spanish National Research Council - CSIC)

Abstract format: Oral

Over the past decades, studies on the subject of the exceptional megalithic necropolis of Barbanza (Galicia, Spain) have articulated a highly significant spatial interpretation of these monuments within the landscape they occupy. The definition of these formal spatial regularities allows us to explore common patterns in architectural arrangements and experience.

Recently, this topic could be revisited thanks to the interest it holds for the X-Scape Synergy project (INCIPIT-CSIC Santiago de Compostela and partners). The X-Scape project aims to understand the relationship between the mind and the material world, implementing state-of-the-art visual neuroscience and agent-based simulations. Including Barbanza as a case study in embodied visual perception permits for further research on these megalithic monuments and the implications they and their spatial arrangements can hold for the societies they belonged to.

In this presentation the first results of this year’s field campaigns are detailed. Moreover, the potential of this archaeological line of investigation is discussed. This study brings new knowledge for the megalithic context of Barbanza and the northwestern Iberian Peninsula to the table, but also in a broader sense furthers attempts to understand societies and their perceptions throughout prehistory.

9 BUILDING COMMUNITY: TECHNOLOGY, AESTHETICS, AND COMMUNITIES OF PRACTICE IN NEOLITHIC CAITHNESS

Abstract author(s): Zaleskaya, Liudmila (University of Edinburgh)

Abstract format: Oral

Chambered cairns are still a common fixture in the Scottish landscape. They remain a vital source of evidence for the Neolithic period, especially in the regions where settlement data is scarce/lacking.

Owing to the durability of their material components, they present an image of longevity – massive, unchanging. Was this, however, the builders’ intent or mere unintended consequence? How can we investigate the impulses behind and the implications of the design of drystone chambered cairns (beyond the often-explored ideas of order, cosmology,

and ritual)? How did the tradition form? What were the modes of its perpetuation? What was its role in the negotiation of community identity and social cohesion?

The discussion is focused on several Orkney-Cromarty tombs in Caithness to understand how their architectural design/style, technological, and visual properties fit into the visual culture, aesthetics, and tradition in the Neolithic. Here, cairn architecture is conceptualised as evidence for, and instrument of, the construction of Neolithic community identities. The technological, design, visual, and aesthetic aspects of it are considered for their role in such social processes of community formation, negotiation, and perpetuation.

The existence of the aesthetic and visual traditions and concerns, alongside the technological ones, in the Neolithic Caithness is highlighted and explored. Such concerns, norms, rules-of-thumb, and dogmas are considered for their role in technological knowledge transmission, and as the mechanisms which fostered social cohesion. The notion of exercised creativity and deliberate choices in the past is explored and contrasted with the role of tradition and conformity in the establishment and perpetuation of communities/communities of practice in Neolithic north-east Scotland. A theoretical and methodological framework incorporating an aesthetic approach and communities-of-practice approach in archaeology is explored and evaluated in terms of its applicability towards the study of the material remains of the past, particularly prehistoric architecture.

169 NEOLITHIC AND CHALCOLITHIC LARGE BLADES. IDENTIFYING AND DEFINING EXCEPTIONAL LITHIC PRODUCTS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Guichet, Thomas (Université Paris 1 Panthéon Sorbonne; UMR 8215 Trajectoires) - Collin, Jean-Philippe (Université Libre de Bruxelles; CreA-Patrimoine; UMR 8215 Trajectoires)

Session format: Regular session

In Neolithic and Chalcolithic Europe, large flint and obsidian blades stood out from most of the contemporary lithic productions. In some cases these might be a few exceptional blades produced on the fringes of normal debitage by mobile knappers, whilst in others they might represent large-scale production on dedicated sites. Either way, the large blades are distinctive by their size and more broadly by the technical investment they display.

Their very uneven distribution across Europe – from Bulgaria to Portugal and from Italy to Denmark – is surprising and inevitably raises the question of the appearance of these exceptional blades: local, autonomous development and/or technical transmission from another part of Europe?

The organizers of this session wish to bring together observations from across Europe, with a particular focus on:

- the general archaeological context: culture, chronology, places of production (household, settlement, dedicated workshops...), distribution areas.
- the technical specificities of the debitage: acquisition and selection of rocks, shaping the core, removals preparation, debitage techniques. Any further information regarding the criteria used for debitage technique diagnosis would be highly appreciated.

The ultimate aim of the session is to draw up a panorama of the emergence and decline of large flint and obsidian blades across the continent.

ABSTRACTS

1 WHEN LARGE START TO BE MEANINGFUL: LONG BLADES PRODUCTION OF THE BLICQUY/VILLENEUVE-SAINT-GERMAIN CULTURE

Abstract author(s): Bostyn, Françoise (University of Paris 1; UMR 8215) - Denis, Solène (CNSR-UMR 8068 Temps)

Abstract format: Oral

Our paper will question the appearance of large blade production in North-western Europe. At the turn of the Vth millennium, the Blicquy/Villeneuve-Saint-Germain culture emerges in Northern France and Middle Belgium on an LBK substratum. An important rupture with the LBK occurs at that time within the organisation of lithic productions. A diversification of productions (flake and faceted tool versus blade productions) reveals a segmentation of tasks with the coexistence of different groups of knappers. This segmentation goes even beyond domestic needs with the emergence, in the course of the chronology, of the production of large blades. This production is exclusive to some sites of the Paris Basin and is conducted by knappers of a very high level of know-how who can be considered specialists. Furthermore, these long blades are produced to circulate within a large territory, sometimes by itinerant knappers. So, the individualisation of large blades as a proper techno-economic category starts to be meaningful at the beginning

of the Vth millennium in this part of Europe. It allows for highlighting the social segmentation of the activities among these post-LBK communities.

2 FROM THE FLINT MINES TO THE ENCLOSURES : LARGE BLADES FROM SPIENNES (BELGIUM) DURING EARLY IVTH MILLENIUM BCE

Abstract author(s): Guichet, Thomas (Université Paris 1 Panthéon Sorbonne; UMR 8215 Trajectoires)

Abstract format: Oral

Spiennes flint mines had been first described between 1842 and 1851 before proper excavations took place in 1867. One hundred years and many campaigns later, hundreds of well shafts have been discovered, displayed between two sectors, Petit-Spiennes and Camp-à-Cayaux.

Blades and cores had been already found during the 19th century researchs. Modern excavations in the 60s and 80s revealed blades production workshops within the two sectors, in addition of an intense production of flint axes.

The flint mines of Spiennes have been largely exploited during Neolithic, from the 42nd to the 23rd centuries. Blades production workshops have been dated to the early 4th millenary. Those dates are contemporary to others enclosures and domestic settlements where Spiennes blades have been found.

This contribution's purpose is to present the results of the latests studies made about blades productions within the two different sectors of Spiennes flint mines.

Flint blocks, directly excavated from the well shafts, were shaped within the workshops near by and blades were produced at the very same place.

Blades have regular breadth and thinness. They are between 15 and 20 cm long but the longest are up to 25 cm. Their edges and ridges are linear. Furthermore, some blades butts and bulbs could refer to the pressure technic. Based upon those criterias, we assume the coexistence of two major technics : indirect striking and pressure.

Such productions needed a high level of skill and raise the question of technic specialization, especially when we compare them to others productions at Spiennes. Furthermore, clues of apprenticeship have been identified within the workshops.

Majority of the blades were displayed toward northern France and Belgium enclosures, belonging to the Michelsberg culture. The proportion of Spiennes artefacts among blades is high. Spiennes workshops were significant blades displayers for communities north of Paris Basin.

3 THE NEOLITHIC SITE OF ORP/JANDRAIN-JANDRENOUILLE: NEW PERSPECTIVES ON THE LARGE BLADES OF MIDDLE BELGIUM

Abstract author(s): Collin, Jean-Philippe (Université Libre de Bruxelles)

Abstract format: Oral

Regarding flint mines and blades production, the area of Middle Belgium is well known thanks to sites such as Spiennes (Mons Basin, Belgium) and Rijckholt-Sint-Geertruid (Limburg, The Netherlands). Both sites emerged at the end of the 5th millennium, were in activity during nearly 2000 years (4200-2200 BCE) and share a lot of similarities regarding extraction strategies and products. Geographically located halfway between the two is the site of Orp/Jandrain-Jandrenouille (Hesbaye, Belgium). This Michelsberg site (4200-3600 bce) stands out by a smaller size, a shorter lifespan and by what appears to be a clear focus on the production of large blades.

The presence of those three sites in the same cultural and environmental context inevitably raises the question of their possible interrelation. In fact, the waste products from the blade production of the Orp site (cores, broken blades) present strange similarities with those of Spiennes. What if, after all, these technical specificities are indicative of knapping skills transfers between those sites? What would that mean in terms of the Michelsberg lithic economy structuration?

4 THE ORIGIN OF THE NEOLITHIC FLINT MINING IN WESTERN MAŁOPOLSKA (SOUTHERN POLAND)

Abstract author(s): Stefanski, Damian - Trela-Kieferling, Elżbieta (Archaeological Museum in Kraków)

Abstract format: Oral

The elaboration explores the issue of the origins of flint mining in western Małopolska (southern Poland). This area is known for numerous flint outcrops for which the source rock is limestone of the Oxfordian age of the Kraków-Częstochowa Upland. Remains of intensive flint processing in the Neolithic period have been documented at several sites. The investigation basing on relatively well-recognized mines and workshops in Sąpów and Bębło. Both were exploited by the late communities of the Lengyel-Polgar cycle. In the archaeological evidence, the presence of mined raw

material is related to „the metric change“. This term is defined in the literature as an increase in blade dimension which can be observed in lithic production. It also marks the presence of specialised workshops that utilised mined raw materials and were located in the vicinity of mines. This system replaced the early and middle Neolithic methods of manufacturing blades and flakes from small cores that were processed in settlement zone. The transition was thought to be a result of internal technological progress made by local Lengyel-Polgár communities under the influence of new cultural impulses reaching Małopolska from the Danube area. In our approach, the new supply model appeared as an already-defined model that was executed by experienced outsiders. It was also hypothesized that the technical caesura that was suggested was not categorical and that new patterns in a very small area might coexist with earlier ones. It is also argued that locally it emerged in the second half of the fifth millennium BC (Lesser Poland) and it is thought to be a component of the early Eneolithic set.

5 ENEOLITHIC BLADES FROM BRONOCICE, POLAND, AS AN ELEMENT OF CURATIVE FLINT ECONOMY

Abstract author(s): Oberc, Tomasz (Institute of Archaeology and Ethnology, Polish Academy of Sciences)

Abstract format: Oral

Lithic economy of south-eastern group of Funnel Beaker Culture and Funnel-Beaker-Baden horizons seem to be revolving along two main branches in SE Poland. In the settlements of these two formations, functioning between approx. 3650-3400 and 3400-3000 BC respectively, a mass production by skilled flint workers is seen with magnificent examples of axe heads and macrolithic blades, and at the same time signals of flint scarcity are observed, manifested by high quantities of repaired or reformed specimens, splintered pieces and extremely used cores, without observable regard to the raw material used. During recent re-examination of lithic assemblage from the site in Bronocice – an about 40 ha. site complex, excavated between 1969 and 1974 by Polish-American expedition, a series of blade tools was closely examined. Observed patterns of use and repairs seem to point to long “life histories” of these artefacts, as blanks for tools for multiple purposes following each other. This pattern of recycling of the flint tools points to the great economical costs of blanks requisition.

6 THE CHALCOLITHIC PHENOMENON OF LARGE BLADES IN CATALONIA: A STUDY CASE OF FUNERARY CAVES OF PRE-PYRENEES

Abstract author(s): González-Olivares, Cynthia - Mangado, Xavier (SERP - Universitat de Barcelona; Institut d'Arqueologia - IAUB - Universitat de Barcelona) - Martín, Araceli (Servei d'Arqueologia i Paleontologia, Generalitat de Catalunya)

Abstract format: Oral

The presence of the large blades phenomenon made in flint in Europe has aroused special interest among those dedicated to the study of the lithic industry during Late Prehistory. Its wide geographical –across Europe– and chronological distribution –from V to III millennium BC–, as well as the technological features that characterize it, have contributed to the specialization of analytical approaches. This technocultural phenomenon, which appeared in the northeast of Iberian Peninsula (currently Catalonia) during the third millennium BC, has been the focus of study because its functional, economic and symbolic nature. This broad territory, with great variability of local siliceous raw materials, the close distance with good quality procurement areas and the cultural differentiation of the burials –natural caves and megalithic architectonic structures–, have contributed to the development of multicultural and multi-technological expressions, which are reflected in the archaeological records as variability of shapes and techniques linked to the same social realities.

This paper focuses on the area of the Lleida Pre-Pyrenees (Solsonès), where we can locate a large number of caves and rockshelters that were used as tombs during the Chalcolithic, in which the lithic assemblages were composed of large blades and arrowheads made with silica materials of different sources. For this reason, we will present the main contextual and technological characteristics of these grave goods, as well as present the preliminary results of the macroscopic characterization of raw materials.

7 LARGE BLADES OF RECENT IBERIAN PREHISTORY: 3D TYPOMETRY, TECHNOLOGY AND EXPERIMENTATION

Abstract author(s): Vinagre, Antonio - Aguirre, Mikel (University of the Basque country) - Baena, Javier (Universidad Autónoma de Madrid) - Palomo, Antoni (Universidad Autónoma de Barcelona) - Terradas, Xavier (Inst. Milà i Fontanals - IMF-CSIC)

Abstract format: Oral

The large blades in siliceous rocks constitute a type of lithic production of high value in the recent European Prehistory, frequent in funerary contexts and scarce in domestic ones due to its intense functional consumption. It is one

of the most emblematic products in the Iberian Peninsula from the late Neolithic to the Chalcolithic, which shows the knowledge of special sources of raw material, sometimes subjected to mining, and a technology that requires high levels of mastery in knapping, in addition to revealing long-range trade networks. However, research has not yet adequately characterized its typometry (3D formats and sizes), and the characters that can differentiate the different techniques for its production, although already described, lack an experimental body of reference available to researchers. We provide a geometric classification for its precise typometric definition, both from productions from the archaeological record of the Iberian Peninsula and from experimental collections, trying to define the concept of „large blade“ dimensionally, adapted to the availability of raw materials in each region. On the other hand, we focus on the technology of its production, from the experimental programs that we are currently developing, by means of indirect percussion and pressure reinforced by a lever, and we will try to provide a little more precision to the characterization and definition of the technical diagnostic criteria, describe the necessary means and tools, with archaeological references if any, and the stigmas that may reveal the use of one technique or another.

8 LARGE NODULES, LARGE BLADES IN THE NEOLITHIC AND THE COPPER AGE IN NORTHERN PUGLIA (ITALY)

Abstract author(s): Muntoni, Italo (Soprintendenza ABAP BAT-FG, Ministry of Culture) - Mironti, Vittorio (independent researcher in Archaeology, Prehistory)

Abstract format: Oral

Northern Puglia represents one of the territories with the greatest potential for the study of the process of Neolithisation in southern Italy. Besides the numerous known inhabited settlements with their typical excavated large ditches, located predominantly on the Tavoliere plain and to a lesser extent on the Daunian Subappennine range, the geographical area of the Gargano promontory preserves the oldest flint quarries so far known on the European continent. This project aims to analyse the evolution of blade production in relation to the diffusion and circulation of the raw materials in the territory, with particular focus on the production of large blades.

In this territory, the production of lithic artifacts was closely linked to the circulation and availability of raw materials. In fact, it was only in an advanced phase of the Early Neolithic, and especially in the Middle Neolithic, that large flint nodules (extracted in the Gargano) and the objects created from them began to be circulated on the plain, giving rise to lithic assemblages characterized by the predominance of blades, including some of large size. In the earliest phases of the Neolithic, on the contrary, lithic objects were created from small-to-medium-sized cobbles found in secondary deposits on the Tavoliere.

The close connection between raw materials and lithic assemblages can also be shown, although in inverted form, for the production of obsidian items (which was very widespread throughout the Italian peninsula during the early and advanced phases of recent prehistory). In fact, it is possible that the abundant availability of high-quality flint in northern Puglia in the form of large nodules may have also negatively impacted the circulation of obsidian in large blocks and, consequently, the production of poorly documented large objects in this raw material.

9 CHALCOLITHIC LARGE CANAANEAN BLADES - EARLIER THEN THOUGHT

Abstract author(s): Abadi-Reiss, Yael - Varga, Daniel (Israel Antiquities authority)

Abstract format: Oral

The excavations of the large Chalcolithic site ‘Agamim’ in the southern coastal plain of Israel, revealed several phases in seven excavated areas, all belong to the Ghassulian culture. The variety of flint tools is typical of the period: About half of the tools are sickle blades, there are scrapers, bi-facial and ad-hoc tools. Most of the sickle blades found were from the typical Chalcolithic type: rectangular, narrow, with an abrupt or semi-abrupt backing and one or two truncations. Apart from them, the assemblage also includes sickle blades made on Canaanite Blades.

Canaanite blades exhibit two parallel ridges from previous removals, creating a trapezoidal cross-section. It was customary to associate the Canaanite blades with the Early Bronze Age, and even as fossils directors for the period. This idea arose not only from the fact that the Canaanite blades are different from the blades typical of the Chalcolithic period in dimensions and morphology, but mainly from the technological difference in their production. The assumption was that Canaanite blades were produced in centralized workshops and distributed by trade, while the Chalcolithic blades were produced in or near the settlement areas. Despite Bar and Winter’s (2010) analysis that showed the presence of a knapping technique for Canaanite blades combined with that for manufacture of non-Canaanite blades in Ghassulian sites, the opposing assumption continued.

Dozens of Canaanite blades were discovered in ‘Agamim’, with cores and debitage typical to this technology. These findings cannot be the result of layer mixing, and their large number shows that their presence on the site is not accidental. Beyond that, Canaanite blades were discovered both in residential areas and in public areas, including a 25

cm long blade. The data from 'Agamim' clearly shows that the technological tradition to produce Canaanian blades was an integral part of the Chalcolithic.

10 CHALCOLITHIC FLINT SUPERBLADES FROM BULGARIA – A BIOGRAPHICAL PERSPECTIVE

Abstract author(s): Gurova, Maria (National Institute of Archaeology and Museum, Bulgarian Academy of Sciences)

Abstract format: Oral

An impressive example of high technological skill in prehistoric knapping technology in Bulgaria is the extra-long or so-called superblades (over 25 cm long) found mainly in mortuary contexts (as burial goods) or in hoards from domestic contexts. In the first case, the blades play their votive ritual role of grave goods, in the second – they are grouped in sets of so-called caches/hoards and are kept as reserves of precious items for future use.

The superblades exhibit a peculiar artefact biography, which requires a multi-faceted study: characterisation of the raw material demands knowledge of flint resources and their technical properties; the reconstruction of technical knapping skills necessitates meticulous analysis of a spectrum of particular stigmata; while functional interpretation of the blades needs careful use-wear observations and expertise. Finally, the interpretation of these representative finds requires careful contextual analysis, bringing together empirical data and conceptual premises.

This paper focuses on the author's study of superblades from three Chalcolithic cemeteries on the Black Sea coast of Bulgaria: the Varna, Durankulak and Kozareva Tell cemeteries. Several hoards of superblades from two tell settlements are also included, thus encompassing the contextual niches of such finds.

11 LARGE BLADES EAST OF THE CARPATHIANS

Abstract author(s): Videiko, Mykhailo (Kyiv Borys Grinchenko University)

Abstract format: Oral

In the territory from the Carpathians to the Dniro they were widespread from the end of the fifth millennium, production continued until the end of the fourth millennium. The distribution of large blades here is associated with the Trypillia culture and some neighboring cultures. Raw materials from several deposits were used, located in Volhynia, Dniester, Synukha and Doneck areas. The steppe population used Donetsk flint. Flint was mined in large quantities in mines (Bila Hora on the Dniester) and natural cuts in river valleys (on the Horyn River). The mentioned raw materials made it possible to manufacture blades over 20 centimeters.

Numerous places of production have been opened. A large amount of waste was found there, as well as spent nuclei. Dniester and Cherkasy raw materials made it possible to make blades near 20 cm long. This is evidenced by finds of nuclei and finished products. These blades were used mainly to make serrated sickles, which at that time replaced sickles of the Karanovo type.

Volyn flint was suitable for creating blades longer than 20 cm. Studies have shown that they could be produced by striking and pressing. The larger sizes of the blades made it possible to use their straight parts to create high-quality tips for darts and spears. Such specialized production was investigated by N. Skakun near the village of Bodaky on Horyn river.

In addition to the utilitarian purpose, the blades probably here were prestigious products. Their treasures are known in the Trypillia culture, from a few dozen to a hundred or more products in one place. Among the steppe population, unprocessed long plates were among the burial gifts.

Thus, the territory of Ukraine can be defined as the easternmost area in Europe for the production and use of long blades in the Copper Age.

12 LOCAL PRODUCTION VERSUS THE IMPORT OF LARGE BLADES DURING THE CHALCOLITHIC PRE/CUCUTENI-TRYPILLIA (PCT) CULTURE

Abstract author(s): Vornicu, Diana-Mariuca (Institute of Archeology, Romanian Academy, Iași branch)

Abstract format: Oral

The phenomenon of large blades/superblades from the Chalcolithic of south-eastern Europe (middle of the 5th millennia BC) is associated with the Gumelnița-Kodzadermen-Karanovo VI (GKK) communities that populated the Danube valley (nowadays southern Romania and Bulgaria). At that time, north of the GKK area, in the geographic space between the Carpathian Mountains and the Bug River (nowadays eastern Romania, Republic of Moldova and Ukraine), the pre/Cucuteni -Trypillia (pCT) communities evolved. In its early phase, the pCT blade assemblage was still tributary to the microlithic technologies, with the evolution to medium and large blades becoming visible gradually.

This presentation deals with the lithic assemblage from Târgu Frumos, a pCT site that stands out through its lithic assemblage (almost 6000 artefacts coming from 13 excavated houses). The elongated products, which count for more than 3000 items range from bladelets, to medium-sized blades (the majority) to large blades (20% of the blade

assemblage). The artefacts from the latter category are made from two types of flint: 1. one that is specific for the Cretaceous deposits from the Moldavian Platform, used on a large scale by the pCT communities; 2. the other, the so-called Balkan flint, a raw material that was used on a large scale by the GKK communities (20% of the large-blades from the site) and was not available in the regions inhabited by the pCT communities. By analyzing the dimensions, technological attributes and the morphologies of the large blades of the two raw material categories, we were able to determine that the large blades from the Moldavian Platform flint were produced locally, while those made of Balkan flint are rather products of the GKK lithic technology, being thus imported artefacts in the settlement of Târgu Frumos.

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ADVANCING A BIOARCHAEOLOGY OF HEALTH INEQUALITY: RECENT DEVELOPMENTS AND FUTURE DIRECTIONS

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Moles, Anna (Institute of Archaeology, University of Groningen) - Schrader, Sarah (Faculty of Archaeology, Leiden University) - Gowland, Rebecca (Department of Archaeology, Durham University)

Session format: Regular session

Socioeconomic status is one of the strongest determinants of health today. People at the bottom of the social gradient are not only more likely to die at a younger age, they will also spend more years living with ill health and disability. The COVID-19 pandemic highlighted the impact of social inequities in terms of disease risks and outcomes, especially for the very marginalised members of society. The pandemic also highlighted the way in which other aspects of identity, such as ethnicity and gender, intersect with status to create structural inequities, which lead to disparities in chronic and infectious disease risk and mortality.

Bioarchaeologists are uniquely positioned to examine health inequality in the past. Indeed, for many periods, this is the only source of evidence available for exploring the embodied impact of past structural inequities. The skeleton holds both biographical and intergenerational information concerning body/society interactions and this can be harnessed to explore past adversity and structural violence as a consequence of social inequality. The archaeology of inequality has already made significant contributions to how we conceptualise such disparities in the past, with implications for the present.

In this session we invite speakers whose bioarchaeological research pushes methodological and theoretical boundaries of health inequality research. We are interested in contributions that incorporate recent advancements that address the osteological paradox, biomolecular techniques, and multidisciplinary approaches, including the integration of historical and material evidence. We hope that papers will generate discussion and showcase how the study of inequality in the past can provide unique insights into the range of impacts on people's health and lifeways.

ABSTRACTS

1

BOUNDARY CONDITIONS FOR DETECTING ANCIENT HEALTH INEQUALITY

Abstract author(s): Beck, Jess (University College Dublin) - Robb, John (University of Cambridge)

Abstract format: Oral

Health inequality is a growing problem in the modern world, as encapsulated by the United Nations Sustainable Development Goal Three “ensuring healthy lives and promoting well-being at all ages.” Understanding the duration and tempo of past health inequalities and assessing the strategies previous communities used to mitigate them thus has implications for managing health inequalities problems today. Bioarchaeology provides a unique toolkit with which to examine health and wellbeing in the human past, but insufficient work has been devoted to determining the degree to which health inequalities are detectable through skeletal analysis. Basic questions remain underexplored. What patterns of skeletal pathology will be produced by health inequalities in living populations? What analytical methods are most effective for assessing past health inequalities? How apparent are the intersecting effects of age, gender, and class on health in skeletal samples? In this paper, we address these questions with a simple simulation that draws from the clinical and archaeological literature to model the frequencies of traditional paleopathological indicators of stress and disease, including hypoplasias, cribra orbitalia, porotic hyperostosis, stature, and infectious disease prevalence. Our model explicitly investigates the parameters required to produce clear-cut, statistically identifiable differences between social groups in terms of skeletal indicators of health. Overall, we argue that explicitly grappling with issues of representation and sample bias is a fundamental step in attaining our goals of studying social inequality and health inequality bioarchaeologically.

2 POPULATION HEALTH IN THE IRISH EARLY BRONZE AGE: APPLYING THE BIOLOGICAL INDEX OF FRAILTY

Abstract author(s): Robinson, Stephanie (University College Cork)

Abstract format: Oral

Investigations of population health form a pillar of bioarchaeology, however they are plagued by one key question – how do you define health? One recent approach has suggested a reframing of this question – moving away from a nebulous concept of ‘health’ towards the more modern concept of frailty. However, a repeatable, comparable, and broadly applicable methodology for assessing frailty in skeletal collections has yet to be widely accepted. Published in 2021, the Biological Index of Frailty aimed to improve upon the 2016 Skeletal Index of Frailty, with one major development being the implementation of weighted stress markers. This has allowed for the inclusion of incomplete individuals within samples, widening applications of this methodology. The Early Bronze Age in Ireland is traditionally interpreted as a period of socio-political change, with the rise of the ‘ideology of the individual’ associated with the introduction of tin-bronze and a formal and restricted Individualised Burial Tradition. Included within a reanalysis of the inhumations of the Irish Early Bronze Age, an investigation of population health through the lens of frailty has been undertaken. Alongside an updated understanding of health in this group at the population level, the methodological approach of the Biological Index of Frailty has permitted the investigation of links between demographic and status factors (including age, sex, grave type, and grave goods) and the health status of these individuals, thus increasing our understanding of this period in Irish prehistory. The ability to explore such questions supports the ongoing push away from typological research and towards the modern problem-oriented approach. This study presents not only an updated understanding of how this period of change impacted the health of past peoples, but also comments on the application, usability, and challenges of the Biological Index of Frailty methodology to understanding health in the past.

3 HEALTH INEQUALITY IN ANCIENT GREECE: NEW APPROACHES FOR A BETTER UNDERSTANDING

Abstract author(s): Moles, Anna (University of Groningen)

Abstract format: Oral

Levels of social differentiation varied between different time periods, between urban and rural settings, and across the different regions of the Greek world. Our understanding of health inequality comes both from the written sources and from the bioarchaeological evidence. While there have been efforts towards the integration of osteological, archaeological, and textual approaches, often these studies exist in isolation without the disciplines being brought together for a more holistic approach. In the bioarchaeological record, we have looked at age-at-death and palaeopathology to assess differential health status, while factors such as biological sex, tomb types, grave goods, and burial locations are used as proxies for identifying social status or social groups.

In this paper I will look at our current understanding of the impact of social inequality on health and lifeways in the context of Classical, Hellenistic and Roman Greece through a brief overview of the work that has been done to date. I will then explore how we can advance this knowledge not only through the better integration of different lines of evidence but through the application of new approaches to understanding health and society in the past, such as the Developmental Origins of Health and Disease (DOHaD) approach, the realisation of the implications of the osteological paradox, and combined methods such as a frailty index or index of care. In considering the strengths and weaknesses of these approaches I will assess future directions for the bioarchaeology of health inequality for different types of assemblages.

4 POVERTY, LAWBREAKING, AND ENSLAVEMENT: LIVING AND DYING AS A SOCIAL OUTCAST IN ARCHAIC ATHENS (8TH-5TH CENTURY BCE)

Abstract author(s): Liedl, Hannah (Department of Archaeology, Durham University) - Rothwell, Jessica (School of Human Evolution and Social Change, Arizona State University) - Gowland, Rebecca (Department of Archaeology, Durham University) - Buikstra, Jane (School of Human Evolution and Social Change, Arizona State University)

Abstract format: Oral

During the Archaic period (8th-5th century BCE), the polis of Athens grew into an urban centre and the political system changed from oligarchy to early democratic structures. The historical sources for this period, although useful for documenting socio-political and economic change, provide an exclusively high status, male perspective. Individuals from lower socio-economic backgrounds are the silent majority, whose life experiences have been rendered invisible.

Bioarchaeological analysis has the potential to address this bias. The human remains from the cemetery at Phaleron, Athens, excavated between 2012-2017 hold potential for exploring the lives of ancient Greek people whom history has largely passed by. Analysis of these individuals provide us with a new line of evidence to investigate the impact of

these profound socio-political and economic transformations on the lives of ordinary people. Over 1700 individuals were excavated from burials in jars or shallow pit graves. The simplicity of pit graves, the lack of burial organisation, and limited amounts of grave goods, as well as the presence of several mass burials containing shackled individuals indicates people of low socio-economic status, including potential convicts and enslaved people. This investigation integrates the bioarchaeological evidence with the contextual and historical data for this period in order to reveal information about the people whose life stories currently remain untold.

5 IMPERIAL INEQUALITY? COMPARING SKELETAL AND DENTOALVEOLAR STRESS PROXIES AMONG ROMAN SENATORIAL AND IMPERIAL PROVINCIAL POPULATIONS

Abstract author(s): Bews, Elizabeth (University of South Florida) - Marklein, Kathryn (Center for Archaeology and Cultural Heritage, University of Louisville; Department of Anthropology, University of Louisville)

Abstract format: Oral

Recent bioarchaeological studies of Roman imperialism have emphasized the variability of lived experiences across the empire as embodied in the skeletons of the people who inhabited these social, economic, and political landscapes. Literary sources speak to thriving economic and political conditions under centralized, senatorial rule in Mediterranean provinces, while newly-incorporated, more geographically-peripheral (to Rome) imperial provinces are described as underregulated and subject to corruption. This meta-study considers whether differential methods of governance contributed to social inequality in the Roman period by comparing published palaeopathological data between senatorial (Nsites=25) and imperial (Nsites 23) communities across the Mediterranean.

Crude prevalence rates (CPR) for childhood (linear enamel defects, LED) and adult (antemortem fractures and degenerative joint disease, DJD) stress markers, dietary proxies (cariou lesions, calculus, abscesses, tooth loss), and specific (periodontal disease, PD) and non-specific (periosteal new bone, PNB) bone lesions were compared between senatorial and imperial groups and between male and female subgroups. Kruskal-Wallis and ANOVA results show significantly ($P < 0.05$) higher CPR in senatorial than imperial groups for all conditions except DJD, findings echoed among male and female subgroups for LED, PNB, and PD. Additionally, linear regression indicates that males experienced proportionately higher CPR for almost all conditions (excluding calculus and fractures) than females in both imperial and senatorial contexts.

Results suggest that although the dichotomous senatorial-imperial governance infrastructure was developed to favor central Mediterranean growth, geographically-peripheral imperial communities were not subjected to heightened morbidity as a by-product of their governance status. Rather, it appears that regardless of imperial or senatorial rule, being male in the Roman period was associated with significantly higher rates of almost all skeletal stress markers. Therefore, estimated sex seems to be an important factor buffering individuals living on the margins of the Roman Empire from the severe stresses that their counterparts living in the imperial heartland experienced.

6 FRAILITY AMONG NON-SURVIVORS: INVESTIGATING RURAL-URBAN HEALTH INEQUALITIES IN CHILDREN AND MOTHERS THROUGH ORAL STRESS INDICATORS

Abstract author(s): Chiappa Zugazagoitia, Oriana - Schrader, Sarah (Leiden University)

Abstract format: Oral

Substantial research has been done assessing health inequalities between rural and urban contexts; however, fewer studies have considered the effect of rural/urban living on non-adults. Because dental enamel does not remodel, analyzing the time of dental stress insult in both deciduous and permanent teeth allows for the analysis of infant-maternal stress during specific periods of time. By investigating dental stress markers, we can overcome some of the limitations of the osteological paradox, providing information about maternal and infant health inequalities between rural and urban contexts from a perspective of frailty and survivorship.

This research focuses on assessing the effects of rural/urban living in infant and maternal health during the post-medieval period (1600-1800 A.D.) in the Netherlands through the comparison of linear enamel hypoplasia from a rural (Middenbeemster) and an urban (Arnhem) collection of non-adults and adults. To do so, frequencies and age-at-formation of linear enamel hypoplasia were recorded and analyzed for permanent and deciduous teeth using age-categorical data to compare them between rural and urban individuals. The results from this research demonstrates that urban living had a negative impact on infants likely due to maternal stress in-utero, as indicated by significantly higher rates of linear enamel hypoplasia in deciduous teeth. In addition, higher prevalences of linear enamel hypoplasia in deciduous teeth are related to frailty, rather than resiliency, since individuals who died as infants were clearly more vulnerable than those who died in later stages of childhood.

7 EARLY LIFE STRESS AND FUTURE HEALTH OUTCOMES: AN ISOTOPIC MARKER FOR FRAILTY?

Abstract author(s): O'Donoghue, Ruth - Buckberry, Jo - Koon, H (University of Bradford)

Abstract format: Oral

This project sought to explore the relationship between the isotopic evidence for diet and health in the first years of life and future health outcomes, within an urban Industrial burial population.

Carbon ($\delta^{13}\text{C}$) and nitrogen ($\delta^{15}\text{N}$) incremental dentine analysis was performed on the first permanent molar of 22 non-adults from New Bunhill Fields (NBF) burial ground, Southwark, London (1821-53). Isotopic profiles were created spanning from birth until tooth completion/death during tooth development.

A distinct pattern of opposing covariance (elevation in $\delta^{15}\text{N}$ and decrease in $\delta^{13}\text{C}$) was observed within the first year of life in six non-adults with a younger age-at-death (4-8.5 years), who exhibited extensive evidence for metabolic disease. This data is consistent with breastfeeding through a period of physiological stress, and subsequent weaning after recovery. It is proposed that this pattern of opposing covariance represents infants who were exposed to significant stress in early life and had to adapt to this stress short-term in order to survive, but who were ultimately left frailer and more susceptible to disease in later childhood than their more robust peers who did not experience this early life stress. The NBF burial population was of low socio-economic-status (SES), and this evidence for significant early life stress amongst those who died young but not amongst those who survived is consistent with research suggesting that only the most robust low SES individuals were surviving to adulthood in Industrial era London.

This data suggests that incremental dentine analysis may provide a method to explore the relationship between early life stress and future health outcomes in archaeological populations, which does not require the retention of childhood skeletal pathology or skeletal stress markers prone to remodelling over time, and which allows the direct comparison of childhood data in both those who survived into adulthood and those who did not.

8 MAPPING CHILD HEALTH INEQUALITY ON A LOCAL SCALE: A MULTIDISCIPLINARY CASE STUDY FROM ST BRIDE'S PARISH, LONDON, UK (19TH CENTURY)

Abstract author(s): Newman, Sophie (School of History, Classics and Archaeology, University of Edinburgh) - Bekvalac, Jelena (Centre for Human Bioarchaeology, Museum of London)

Abstract format: Oral

London in the 19th century posed significant health risks associated with rapid industrialisation and population expansion. Within it also existed a highly stratified society, with Engels observing in 1844 "...poverty often dwells in hidden alleys close to the palaces of the rich..." (1950:26), and this is reflected in Charles Booth's London Poverty Maps produced in the late-19th century (1889-1903). Social inequality has a significant influence on health, with social status dictating factors such as housing quality, diet, child care, and exposure to environmental pathogens. Thus, within the localities of 19th century London the lived experiences of those residing in close proximity to one another likely differed substantially.

This study integrates historical and bioarchaeological data, and GIS, to understand patterns in child morbidity and mortality within the parish of St Bride, London, UK. The burial records for St Bride's Church provide data (sex, age-at-death, abode, and date and cause of death) for non-adults (<17 years: n=1,681) interred between 1820-1850. Crude status groups have been established from their recorded burial location based on burial fees: lower ground (lower), upper ground (mixed), vaults (higher). Using QGIS, and a georeferenced copy of Booth's map, each individual will be registered to the street recorded as their residence, enabling spatial analysis of child mortality by sex, age, cause of death, and social status. Osteological data from excavations at St Bride's churchyard will establish whether non-adults from the Lower Ground (lower status) experienced greater health stress (via analysis of growth, dental enamel hypoplasia, cribra orbitalia, periosteal new bone formation, and specific infectious disease) than those from the Crypts (higher status).

Over 120 years since Booth's inquiry into life and labour in London many areas remain zones of marked social inequality, highlighting the importance of understanding the impact of complex health inequalities within communities in the past

9 GROWING UP AND OUT: INTERPRETING STATURE OF IRISH IMMIGRANTS IN NINETEENTH-CENTURY NEW YORK CITY

Abstract author(s): Warner-Smith, Alanna (National Museum of Natural History, Smithsonian Institution)

Abstract format: Oral

Documenting evidence of health and labor, bioarchaeologists are positioned to read bodies as "archives" of inequality and structural violence experienced and embodied by past people. The "archive" I turn to is the George S. Huntington Anatomical Collection (1893-1921), currently part of the Smithsonian Institution's biological anthropology collec-

tions. The collection is comprised of both U.S.-born persons and immigrants who died in New York City at the turn of the twentieth century. Following their deaths at public institutions, their bodies were transported to a medical school, where they were dissected by students and subsequently curated by Huntington.

While the history of the collection speaks to postmortem inequality and structural violence, it has also tied persons in the collection to particular categories, as their circumstances at death mark them as “the poor.” Yet historians of the nineteenth century demonstrate that such categories were in flux, made malleable by mass migrations and movements, urbanization and industrialization, and market booms and busts. To highlight these complexities, I focus on inequality experienced by Irish immigrants in the collection. This paper responds to archaeological critiques that question the utility of “poverty” as an analytical category and promote an understanding of inequality that accounts for contingency and complexity across lived experiences and landscapes. I do so through the lens of stature, an important skeletal indicator of early health experiences that is often interpreted as a marker of status or class. By integrating archival research with skeletal data, I analyze stature in relation to experiences of the Irish Famine and immigration experiences. Far from a singular experience of “poverty,” I argue that stature data shed light on experiences of the Famine and the ways health was shaped by immigration, gendered labor, and the environments of Ireland and New York City across the life course.

10 INVESTIGATING HETEROGENEOUS FRAILTY UNDER THE PRISM OF MULTIPLE SOCIO-POLITICAL TRANSITIONS, IN ANCIENT AMPHIPOLIS, MACEDONIA, GREECE

Abstract author(s): Michael, Dimitra (School of History and Archaeology, Faculty of Philosophy, Aristotle University of Thessaloniki) - Snoeck, Christophe (Analytical, Environmental and Geo-Chemistry, Vrije Universiteit Brussel, AMGC-WE-VUB; Multidisciplinary Archaeology Research Institute, Department of Art Studies and Archaeology, Vrije Universiteit Brussel, MARI- LW-VUB) - Tselekas, Panagiotis - Sverkos, Ilias (School of History and Archaeology, Faculty of Philosophy, Aristotle University of Thessaloniki) - Malamidou, Dimitra (Ephorate of Antiquities of Serres) - Triantaphyllou, Sevi (School of History and Archaeology, Faculty of Philosophy, Aristotle University of Thessaloniki)

Abstract format: Oral

Heterogeneous frailty lies on the fact that every individual alive at a particular age is not at the same risk of dying at that age, due to biological (e.g. genetic predisposition) and cultural (e.g. access to food) reasons. Exploring heterogeneity in frailty and introducing a likely family-centered approach provides a powerful glimpse into past social dynamics. Nonetheless, the concept of frailty has been widely overlooked, as few papers have directly investigated it as a subject worthy of inquiry in and of itself. Neglecting to properly address predisposing factors for stress and disease can create serious biases and misinterpretations when attempting to reconstruct the health profile of a past society. It is essential, therefore, to provide a high-resolution on how cultural and biological factors may lead to stress and disease, through investigating population mobility and biodistance combined with people’s health, lifestyle and foodpaths. This approach lies at the heart of the recently funded project BIOSOCIOPOLIS (Marie Skłodowska-Curie individual postdoctoral fellowship-Grant agreement 101065089), which aim to develop a new interpretive model to reveal the extent to which multiple socio-political transitions, affect human lifeways and deathways, in a diachronic perspective. Amphipolis which belongs to the modern regional unit of Serres in Macedonia, in the north of Greece, experienced many different political models between the Late Archaic/Classical and Roman periods and was thus chosen as an ideal case study. Bioarchaeological evidence will be drawn from various mortuary burial contexts linked to “elaborate” and “modest” burial features dating from the Late Archaic/Classical and Roman periods. The multi-leveled approach which will combine macroscopic and analytical isotopic tools with mortuary data is expected to investigate the sources of frailty and make a true methodological advancement for the field of historical bioarchaeology.

11 DENTAL DISEASES AS AN INDICATOR OF MULTICULTURALISM (ACCORDING TO MATERIALS OF CHERVONY MAYAK NECROPOLIS)

Abstract author(s): Kotova, Nadiia - Kozak, Oleksandra - Symonenko, Oleksandr (Institute of Archaeology of Ukrainian National Academy of Sciences, Kyiv)

Abstract format: Oral

After the decline of Scythia in the 3rd century BC the political and ethnic situation in the Northern Pontic region was changed. In the steppe zone Scythian culture was replaced by Sarmatian and Late Scythian ones. The core of the latter, according to O. Symonenko, consisted of the Scythians of Dniester region who moved to the Lower Dnieper under pressure of the Getae or Bastarnae. The Late Scythian culture contains foreign cultural elements (La Tène, Sarmatian, Antique). Multiculturalism can be traced, in particular, in the funeral rites. The main type of Late Scythian burial structure is the catacomb while other types of structures (simple pits and niche graves) were accompanied by poor grave goods.

One of the best-studied Late Scythian sites is the Chervony Mayak necropolis. It is located behind the Chervony Mayak village, next to the hill-fort, on the high right bank of the Dnieper River. During the excavations of 1976-1977, 1986-1988, 2011-2021 in total 177 graves have been discovered.

Preliminary studies of bone remains have shown the differences in the morphology and health of people buried in crypts and pits. It was assumed that the richer burials belonged to representatives of the dominant people (Late Scythians). Representatives of another ethnic group (Sarmatians?) are buried in pits without grave goods.

Diets and the body's reaction to stressors are indicators of population welfare. Among the indicators of stress, tooth enamel hypoplasia is the most indicative. Dietary patterns are reflected in the intensity and frequency of caries, the quality of calculus, and the characteristics of tooth abrasion. There is a significant difference in these indicators among people buried in the graves of different types. It is one of the possible indicators of the multiculturalism in the necropolis.

12 IMPAIRMENT AT MEDIEVAL ESTREMOZ, PORTUGAL

Abstract author(s): Curto, Ana - Maurer, Anne-France (HERCULES Laboratory, University of Évora) - Fernandes, Teresa (Biology Department, University of Évora)

Abstract format: Oral

Most of the attention given to impairment in bioarchaeology has been in the form of reporting case studies and estimating how much care could have been provided to that individual for their survival. We aim to take a step forward by comparing diet, estimated from stable isotope ratios (carbon and nitrogen), and various skeletal indicators of health between individuals with variable degrees of physical impairment (n=8) and those representative of the adult general population (n=33) in medieval Estremoz, Portugal. This way, we inferred the health status of these individuals besides evaluating their survival.

Sex and age at death were estimated, and morphometric characteristics, skeletal lesions and indicators of physiological stress were recorded. The number of linear enamel hypoplasias (LEH) was counted for each tooth, the age of the LEH formation was estimated for each line of the canines (Cares Henriquez and Oxenham 2019). The Biological Frailty Index (Zedda et al. 2021) was calculated and the guidelines of the Index of Care (Tilley & Cameron 2014) were considered.

The individuals with physical impairment do not have more frequent or more severe skeletal signs of physiological stress or traumas than the rest of the population recovered from Estremoz. The survival into adulthood with apparent good health of individuals with deforming and limiting congenital diseases provides direct evidence for childcare towards disabled children. It appears that at medieval Estremoz people with physical impairments or physically distinctive were being taken care of in their childhood and when their health status required so.

13 NARRATIVES OF MARGINALISATION: SOCIAL INEQUALITY AND STRUCTURAL VIOLENCE IN VIKING-AGE SCANDINAVIA

Abstract author(s): Raffield, Ben (Uppsala University)

Abstract format: Oral

Current archaeological paradigms for the discussion of the Viking-Age (c. 750-1050 CE) are framed almost exclusively by the study of elites. These were martial rulers, their kinship groups and retinues, and the aristocratic landholders who occupied the upper strata of Scandinavian society. The emphasis ascribed to these groups in both scholarly and popular literature reflects cultural historical perspectives dating from the 19th- and early-20th century, when antiquarians and early archaeologists sought to anchor the developmental trajectory of the Scandinavian nations within the prehistoric past. Today, the focus of research on high-status social groups continues to cast a shadow over the lives of the wider population, including members of the lower-status freeborn classes and semi-free, unfree, or enslaved peoples. To date, there have been few attempts to identify and study the lives of subaltern groups, nor to examine the conditions that allowed hierarchical social structures to be established and upheld across generations.

This paper will introduce a project that has been designed to address these issues through a critical study of social inequality and marginalisation in the burial record. Focusing on cemeteries located in modern-day Sweden, the project will mobilise a novel framework that combines bioarchaeological, material, and textual analyses in order to examine the ways in which systemic inequality impacted the health and lifeways of different social groups. This will provide a new and crucially overlooked perspective on Viking-Age communities that ascribes primary to those occupying the bottom of the social ladder.

DISPLACED AND SCATTERED: IDENTIFYING AND ADDRESSING SYSTEMIC INEQUALITY IN AN OSTEOLOGICAL TEACHING COLLECTION

Abstract author(s): Marklein, Kathryn (Department of Anthropology, University of Louisville; Center for Archaeology and Cultural Heritage, University of Louisville) - Davis, Mekenzie (Department of Anthropology, University of Louisville)

Abstract format: Oral

Bioarchaeology provides robust methods and avenues for identifying and addressing inequality in archaeological contexts. Recent global ethics movements in biological anthropology, however, illuminate issues of social injustice, racial inequity, and structural violence imbedded in the foundations of bioarchaeology and perpetuated in human skeletal research, curation, and pedagogy. The tendency to essentialize historic documented human skeletal collections to their anonymized metadata and research utility has rendered skeletonized individuals in human osteology and methods courses as educational objects, subjected to postmortem dehumanization in the classroom context. In this paper, we apply a multi-phase approach to the analysis, interpretation, and long-term memorialization of over ten commingled and partially represented adult individuals relocated to the University of Louisville's Department of Anthropology after their discovery in the Department of Biology. Thusly, we aim to 1) demonstrate how skeletal teaching collections represent legacies of inequality and systemic violence, and 2) present collection care and engagement options that emphasize respect and mitigate inequality. We employed preliminary assessments of morphological, metric, taphonomic, demographic and pathological variables to resolve commingling of over 240 human bones. Subsequently, we integrated these skeletal data, textual and oral UofL records, and trend analyses of 20th century international trade in human skeletons to reconstruct the likely history of these individuals. Our findings of internationally condoned human body sales, postmortem damage, and unresolvable commingling embodied in these individuals evoke an acquisition narrative similar to many U.S. anthropological and anatomical teaching collections, wherein minority, disenfranchised, and marginalized peoples were exploited in death. We shared these results locally to solicit public opinion, which will further inform how to best memorialize these individuals. Ultimately, this exercise has provided an opportunity to uplift past human narratives and experiences and offered a way to recognize and disrupt the inequality and violence within our own teaching collections.

A. SOCIOECONOMICAL DETERMINANTS AS RISK FACTORS FOR TUBERCULOSIS INFECTION IN THE PAST: HISTORICAL AND SKELETAL EVIDENCE

Abstract author(s): Ribeiro, Fabiana (CIAS - Research Centre for Anthropology and Health, Department of Life Sciences, University of Coimbra; CBMA - Centre of Molecular and Environmental Biology, Department of Biology, University of Minho) - Rito, Teresa - Soares, Pedro (CBMA - Centre of Molecular and Environmental Biology, Department of Biology, University of Minho) - Silva, Ana Maria (CIAS - Research Centre for Anthropology and Health, Department of Life Sciences, University of Coimbra; UNIARQ - University of Lisbon; Centre for Functional Ecology, Department of Life Sciences, University of Coimbra)

Abstract format: Poster

Environmental factors, such as human behaviour, can influence the emergence, spread and maintenance of infectious diseases of human populations. Their influence can be addressed by anthropological and historical studies. Skeletal tuberculosis (TB) occurs in only 3-5% of the untreated cases yet lesions suggestive of TB in skeletons are often found in archaeological and paleontological contexts. It is known that the risk of infection following TB exposure is primarily controlled by exogenous factors and concomitant diseases. Also, some socioeconomic determinants are considered a risk factor to TB, as alcohol and drug abuse, bad nutrition, smoking and indoor air pollution. People with low socioeconomic status have a higher likelihood of being exposed to crowded, less ventilated places and have limited access to safe cooking practicing facilities.

Studying how diseases develop alongside humans, can provide a more accurate picture of its evolution and how that process was affected by the huge cultural changes and public health policies that human populations have undergone through time. The aim of this work is to increase the knowledge about tuberculosis in Portugal in the past. This can be addressed by the study of skeletal evidence and biomolecular analysis in individuals from Portuguese archaeological sites, with TB compatible lesions. Also, documentary resources are a valuable source of information. Their analysis allows to map a chronology of events related with TB, that can provide a more accurate idea of what happened in terms of health measures and reports of a respiratory disease. The goal is to realize how mortality crises conditioned the growth of the different populations at different times and geographics, and whether they differ in intensity and frequency. Lastly, it will be addressed how the different social-economic status, and consequent differentiated exposure to risk factors, could have influenced the disease outcome in Portuguese past populations.

B. A LIFE COURSE APPROACH TO DIFFERENTIAL HEALTH AT MEDIEVAL TZUMMARUM (FRIESLAND, NETHERLANDS)

Abstract author(s): Iodice, Federica - Moles, Anna (Groningen Institute of Archaeology; University of Groningen)

Abstract format: Poster

Using enamel hypoplasia as an indicator of childhood developmental health, this study seeks to take a life course approach to understand health inequality at Tzummarum (Northern Friesland, Netherlands). These enamel defects are caused when an individual experiences physiological stresses during the formation of the tooth crown. These stress factors can be malnutrition, infectious diseases, or physiological stress associated with weaning or hereditary factors. In a life course theoretical framework, the identification of enamel hypoplasia in individuals can be used to identify developmental interruptions. Osteoarchaeological analysis was conducted on an assemblage from two cemeteries at Zwaarderburen and Kapelleterp in Tzummarum associated with the 12th-13th century monastery and settlement. The individuals with largely complete dentitions were analysed to assess the sex, estimate the age, and identify the prevalence of enamel hypoplasia. This research aims to contribute to understanding the different life course conditions between males and females in medieval Tzummarum. This distinction is intended to assess whether there were differential developmental conditions and health between males and females. This research contributes to a reconstruction of the quality of life of the individuals, to open up a broader discussion about the limitations of having enamel hypoplasia as the sole indicator of developmental conditions, and the gender gap in living conditions.

176 TERRACES AS SUSTAINABLE HISTORIC LANDSCAPES

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Turner, Sam (Newcastle University) - Civantos, Jose Maria (University of Granada) - Kinnaird, Tim (University of St Andrews) - Shillito, Lisa-Marie (Newcastle University)

Session format: Regular session

Terraced landscapes of the Mediterranean produce diverse crops, and contribute significantly to soil and water management. Despite their widespread occurrence, the history and archaeology of Mediterranean terraces has been obscure, largely due to problems in dating their construction and use. Current research is showing that terraces were built all around the Mediterranean in the Middle Ages and before. However, the assumption that terraces are generally young means their importance over the longer term is not appreciated. This has many implications for our understanding of historic Mediterranean landscapes, from past soil development and ecologies to economic strategies and social organisation.

Terraces provide a unique window for understanding long-term environmental impacts of land-use and for evaluating long-term sustainability in agricultural practice and policy. Contributions to this session will consider whether terraces enabled greater resilience to economic or ecological instability in the past, and whether they played a role in mitigating the impacts of past climate change. The session will also reflect on the potential of terrace history to inform future land use, considering both increasing climatic instability and changing needs for food production.

ABSTRACTS

1 TERRACES AS SUSTAINABLE AGRICULTURAL ENVIRONMENTS: LONG-TERM PERSPECTIVES FROM THE MEDITERRANEAN

Abstract author(s): Shillito, Lisa-Marie - Brandolini, Filippo (Newcastle University) - Kinnaird, Tim (St Andrews University) - Sevara, Chris (Newcastle University) - Srivastava, Aayush (St Andrews University) - Turner, Sam (Newcastle University)

Abstract format: Oral

Agricultural terraces support many crops and farming regimes around the world, help to retain and improve soils, and enable effective management of water. In the past, archaeologists have struggled to date the construction, modification and use of terraces. This problem has limited research on their broader historic significance, including for example knowledge of past agricultural practices, organisation and division of land in different periods, and the long-term investment choices made by rural communities. The TerraSAgE project has used Optically-Stimulated Luminescence Profiling and Dating (OSL-PD) to date construction and use of terraces in case-studies across the Mediterranean region (Spain, Italy, Croatia, Greece, Turkey). The results have shown regional patterns of terrace and construction and use, with intensive episodes of terrace-building occurring at different times in different areas. This new knowledge has significant implications for future landscape management and the role of terraces in mitigating climate change impacts such as flooding and soil erosion.

2 CHARACTERISING TERRACE SYSTEMS: USING REMOTE SENSING DATA TO HELP UNDERSTAND THE ROLE OF TERRACES IN LANDSCAPE DEVELOPMENT

Abstract author(s): Sevara, Christopher (Newcastle University) - Salazar Ortiz, Natalia (Universitat de Lleida)

Abstract format: Oral

Terrace systems are striking manifestations of the choices people have made in the past as they confronted social and environmental issues and sought short- and long-term agricultural solutions to improve their own lives and/or those of their communities. However, due to a lack of sufficient understanding about the origins, construction, maintenance, and use of terrace systems the reasons for their development largely remain presumptive. A better understanding of terrace development and use is a key to understanding their role within the framework of wider landscape development, and the goal of the project Terraces as Sustainable Agricultural Environments (TerraSAgE). This paper concentrates on the contributions that over 80 years of remote sensing data, including historic aerial and spaceborne imagery, LiDAR and Synthetic Aperture Radar (SAR) data provide for understanding such events. This information forms the basis of TerraSAgE's Historic Landscape Characterisation (HLC), a geospatial dataset created from a variety of historic and modern information to document the historical transformation of the landscape. We present ongoing research in Catalonia, Spain, discussing how HLC approaches, geospatial analysis and modelling can be used to produce broad-scale narratives of terrace development, document and analyse the impact of modern mechanization on terraced environments, assess the impact of terracing on soil loss, and understand how terraces may contribute to ecosystem sustainability on local and regional levels. Together with data from detailed geoarchaeological and environmental analyses being carried out in other components of the project, this information will be used to better understand the origins and development of terraced landscapes as well as to inform development of sustainable strategies for management, monitoring and their future use.

3 ORIGIN, DEVELOPMENT AND LAND DEGRADATION OF THE NORTHERN APENNINES RURAL LANDSCAPE (ITALY)

Abstract author(s): Brandolini, Filippo (Newcastle University)

Abstract format: Oral

Land degradation is a critical environmental issue worldwide. The latest projections on climate change indicate that increasingly severe storm intensity and runoff will induce greater soil losses by water erosion in the future than in the past decades. Recent environmental studies and policies have recommended maintaining archaeological landscape features such as intercropping, agroforestry and cross-slope barriers (e.g. hedgerows, stone walls, earth banks) for their potential benefits to ecosystems.

This study focuses on a portion of the Tuscan-Emilian Apennines coinciding with the municipality of Vetto d'Enza (commonly referred as Vetto), located on the right bank of the Enza River in the Man and the Biosphere UNESCO reserve (Emilia-Romagna region, Northern Italy). The main characteristics of this historic rural landscape trace their origin back to the Middle Ages at the period of the Great Countess Matilda of Canossa (10-11th century CE) and the area's land management system appears to have remained largely unaltered until the end of the 19th-century CE. Among the most distinctive characteristics of this historic landscape are relicts of agroforestry practices (known as 'alberata emiliana') and well-preserved stone walls and earth banks that have been used extensively between steeply-sloping fields to delimit tenurial boundaries and to face agricultural terraces. This study develops a new interdisciplinary approach with particular reference to soil loss and degradation over the long term. It presents innovative methods for assessing and modelling how pre-industrial agricultural features can mitigate soil erosion risk in response to current environmental conditions. Landscape archaeology data presented through Historic Landscape Characterisation (HLC) are integrated in a GIS-RUSLE model to illustrate the impact of varying historic land-uses on soil erosion. The study offers a new protocol that could be used by policymakers and stakeholders who need to develop strategies which encompass both natural and cultural values for landscape planning and management.

4 SCULPTING AN ISLAND: A DIACHRONIC PERSPECTIVE ON TRADITIONAL TERRACE - DRYSTONE SYSTEM AND ITS ENVIRONMENT ON THERASIA ISLAND, GREECE (ARCH2PLANT)

Abstract author(s): Athanasiou, Konstantinos (Department of Architecture, Polytechnic School, Aristotle University of Thessaloniki) - Stavridou, Evangelia (Institute of Applied Biosciences, Centre for Research and Technology - Hellas) - Gkatzogia, Eugenia (Dept of Archaeology, School of History and Archaeology, Aristotle University of Thessaloniki)

Abstract format: Oral

The Arch2Plant project studies the rural, residential and natural environment of Therasia island. Therasia, part of the larger Santorini island group, has a unique volcanic environment with particular environmental and architectonic features. Recent studies have shown that 75% of the island is covered with terraces, except for the steep cliffs of the

caldera; thus, creating a unique man-made environment. Today, the landscape of Therasia is covered by uncultivated terraces, semi-destroyed paths and ruined dry-stone walls. Herein we will focus on three topics regarding the terrace dominating rural environment of Therasia: i) The art of terrace and drystone wall-making. Exploring the significance of the terraces and drystone walls. Measured drawings of more than a hundred well preserved examples of drystone walls, all part of terraces and most of them over a century old revealed the unexplored architectural typologies and constructional details. ii) Reclaiming nature. Studies on vegetation and flora of abandoned terraces and specifically on and near the drystone constructions. The abandonment of the rural landscape has led to the creation of a new micro-ecosystem with characteristic plant species and communities. iii) The tales of the people. Ethnographic study regarding the corps and the cultivation practices on Therasia's terraces. The utter goal of this work is to reconstruct a comprehensive picture of the island's terraced landscape and plant diversity in relation to rural activity, ultimately shedding light on the emergence of Therasia's uniqueness.

5 UPSETTING HERITAGE GIVENS: THE CASE OF RURAL HERITAGE ON THE ISLAND OF NAXOS, GREECE

Abstract author(s): Lekakis, Stelios (Newcastle University)

Abstract format: Oral

Cultural heritage is commonly related to iconic and monumental remains of the past, carefully selected and curated by nation-states to reflect the collective identity of their citizens and serve as a touristic impetus for all incoming others. Even though the emphasis on the material authenticity and the overpowering national stewardship of heritage has been contested, following the 1990s 'opening up' trend to involve plural publics in heritage interpretation and management and the 2000s 'broadening' heritage identification to include new categories (e.g. landscape, intangible, contested, dark heritage), criticism might still be considered unfulfilled. Commenting on the first survey results of the TerraSAgE project on the rural heritage of Naxos Island and our relevant community engagement work, we will be discussing a further upsetting of these heritage givens, i.e. concepts of monumentality, age, authenticity, community participation and will be proposing a new management system of a developing 'ubiquitous heritage' category based on the commons.

6 NEW LIGHT ON THE DATING OF CULTIVATION TERRACES ON PELJEŠAC PENINSULA, CROATIA

Abstract author(s): Carlton, Richard - Turner, Sam (University of Newcastle) - Kinnaird, Tim - Srivastava, Aayush (University of St Andrew's) - Shillito, Lisa-Marie - Sevara, Chris - Germanidou, Sophia (University of Newcastle)

Abstract format: Oral

Agricultural terrace systems extend over large parts of the Mediterranean region and, as focal points of agricultural production systems, offer a window into past socio-economic systems. This potential has remained largely untapped, however, because archaeologists have hitherto lacked the means to interrogate these historic landscapes with respect to their origins and development. This has severely hampered efforts to understand the effects of terracing on landscape and, in turn, strategies for mitigating the impacts of past climate change and informing sustainable strategies for future land-management.

Here we focus on terrace systems on the peninsula of Pelješac in southern Dalmatia, Croatia, where secure chronological information on terraces is entirely lacking. At 25 terrace sites across four coastal and inland locations, trenches were hand-dug and placed in a relative chronological sequence using a portable optically stimulated luminescence (OSL) dating reader and gamma spectrometer. Samples were then collected for absolute OSL dating and additional micromorphology and x-ray fluorescence (XRF) analyses. The results of this multidisciplinary approach, which also includes documentary and ethnographic contributions, suggest large-scale land-use in periods for which little or no other evidence indicative of intensive landscape exploitation survives. Preliminary data show evidence of terrace construction and use between the 1st millennium BC and the 17th century AD, with intensification apparent during the Medieval period. When combined with micromorphological and XRF data and modelled, the findings indicate the value of terraces as long-term resilient, adaptable agricultural and environmental features. The study concludes that this novel multidisciplinary approach leading to a robust chronology has important implications for unravelling the history of agricultural terraces within wider socio-economic systems and the future sustainability of terraced landscapes in Croatia and beyond.

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RECONSTRUCTING PAST AGRICULTURAL TERRACED LANDSCAPES IN GRANADA, SPAIN

Abstract author(s): Srivastava, Aayush - Kinnaird, Tim (University of St Andrews) - Sevara, Chris - Brandolini, Filippo (Newcastle University) - Martín Civantos, José María - Santisteban, José Abellán - Rodríguez, Blas Ramos (University of Granada) - Turner, Sam (Newcastle University)

Abstract format: Oral

The practice and benefits of terracing is attested globally in agriculture, with agricultural terrace systems being prevalent in the Mediterranean region. Despite this, the historical background and social-economic impact of these systems is not well understood due to lack of reliable dating methods. This makes it challenging to fully comprehend the effects of terracing on the landscape, including its role in mitigating the effects of past climate change and developing sustainable land-management strategies for the future. In recent times, owing to the developments in the applications of sophisticated luminescence field and laboratory profiling and dating techniques, research on historical agricultural landscapes in Southern Europe has seen significant growth (1).

In this study, we focus on terraced landscape in Granada, Spain where an examination of 24 terrace sites was conducted in four areas using remote sensing data. Trenches were manually dug and ordered chronologically using a portable optically stimulated luminescence (OSL) reader and a gamma spectrometer. Subsequently, samples were taken for absolute OSL dating and further sedimentological analysis. The data suggest that the construction and utilisation of terraces took place between ~5.5 ka and 18th century in multiple episodes. The chronological findings from this study demonstrates the existence of widespread land-use in the absence of any other surviving evidence of landscape exploitation. As the demand for sustainable land use practices continues to grow in the Mediterranean, such chronological studies of historic terrace systems are important for understanding the complexities of human-environment interactions and for preserving the land for future generations.

1. Srivastava A., Kinnaird, T.C., Sevara C., Holocomb, J.A. & Turner, S. (under review) Dating agricultural terraces in the Mediterranean using luminescence dating: recent progress and challenges. *Land*.

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RETHINKING THE ARCHAEOLOGY OF AGRICULTURAL LANDSCAPES IN THE NORTHEAST OF THE IBERIAN PENINSULA THROUGH A MULTIDISCIPLINARY APPROACH TO CATALONIAN TERRACES

Abstract author(s): Salazar Ortiz, Natalia (Universitat de Lleida) - Turner, Sam (Newcastle University) - Kinnaird, Tim (University of St Andrews) - Sevara, Christopher - Brandolini, Filippo (Newcastle University) - Srivastava, Aayush (University of St Andrews)

Abstract format: Oral

Terraces have defined a greater part of the mountainous landscapes of Catalonia for centuries, as in the rest of the Mediterranean regions of the Iberian Peninsula. Their relevance as cultural and ecological heritage has been valued since the 2000s from different perspectives in sectoral studies, either from the social sciences or from the environmental sciences, highlighting a lack of multidisciplinary approaches. A retrospective analysis shows that, in the context of Catalan archaeology, most of the research on terraces has pursued chronological microdata to insert it into the interpretation of a specific and individualized productive settlement, generally from medieval times and/or later. Few studies have addressed a geo-archaeological perspective and some have adopted an approach from landscape archaeology that is highly dependent on HLC (Historic Landscape Characterisation) and on the security of documentary data, both historical and cartographic. Archaeological investigations of agricultural landscapes in the northeast of the Iberian Peninsula, despite the documentation of the progressive intensification of the occupation and exploitation of rural areas during the Iron Age, Roman times and Late Antiquity have not yet provided chronologies that can trace the use of terraces in Catalonia to pre-feudal times, as it has been possible to verify in other regions of Spain, such as Galicia or Valencia. In this context, the results of the multi-scale analysis of terraces carried out in central Catalonia through the TerraSAgE project (Terraces as Sustainable Agricultural Environments) not only represents a turning point in the diachronic investigation of terraces. It offers, in addition, the decisive opportunity to rethink the approaches and methodologies to be implemented in the study of other Catalan agricultural landscapes that could respond to the need that we archaeologists have to understand them in relation to their regional and translocal historical context and within the framework of Mediterranean culture.

THE TERRACES OF THE MONKS? DATING AND CHARACTERISING THE AGRARIAN SPACES AROUND THE MONASTERY OF SAMOS (LUGO, NW SPAIN)

Abstract author(s): Sanchez-Pardo, Jose Carlos (University of Santiago de Compostela) - Turner, Sam (Newcastle University) - Kinnaird, Tim (University of St Andrews) - Brandolini, Filippo - Carrer, Francesco (Newcastle University) - Silva-Sánchez, Noemi (CSIC) - López-Salas, Estefanía (University of Coruña) - Otero-Vilariño, Carlos (CSIC) - Srivastava, Aayush (University of St Andrews)

Abstract format: Oral

This presentation discusses the results of a multidisciplinary approach to understanding landscape evolution around an important monastic centre in Northwest Iberia: Samos abbey, which was founded in the 6th-7th centuries AD, and has played a permanent role of territorial marker until the present days. As part of the ARPAMED and ECOLOC projects (funded by the Spanish Ministry of Science), our objective is to test whether or not landscape transformations here – in particular terracing related to agriculture – can be linked to the agency of the monks in the last 1400 years. Our landscape study combined analysis of written sources with archaeological survey and test-pitting, including OSL profiling and dating of seven earthworks, with pollen and geochemical analysis of three of them. The results obtained suggest at least four main phases of landscape transformation in the immediate surroundings of Samos abbey. The mid-17th century saw the most recent and visible transformations, but the impact of earlier changes from the Iron Age, 8th-9th and 13th centuries AD were also detected. The data suggest that landscape transformation had already begun in this area centuries before the abbey was created, but the presence of this power centre from the early Middle Ages resulted in intensive use of the territory over the last 12 centuries.

180 THE STORY SESSION

Session theme: 3. Heritage Narratives and Representations

Session organisers: Reiter, Samantha - Walsh, Matthew (National Museum of Denmark) - Bača, Martin (Comenius University Bratislava) - Schelvis, Morgan (University of Amsterdam)

Session format: Regular session

As archaeologists, we are often the most popular attendees at the cocktail party. Tell your occupation and (as long as people don't ask you about your favourite dinosaur or the latest building you designed), the other guests enthusiastically gush about "every time there is an archaeology special on, I always watch it!". Nevertheless, it is quite rare that archaeologists themselves write stories about their discoveries, research or even their quite adventurous lives. Archaeologists do write, but we often do not share these works outside of our professional bubble. We rely mostly on interviews with the press and/or specialized communicators to tell the stories for us. We let others decide how archaeology and archaeologists are presented to the public, whilst we could be our own spokespersons.

This session invites papers which explore the connection between the public fascination for archaeology and the means to encourage archaeologists themselves to capitalize on it. We invite papers from writers of popular science, archaeologically-oriented fiction and museum exhibition designers which address the balance between entertainment and education as well as the importance of narrative. Written, illustrated or otherwise acted case studies of single individuals (either real or imagined) are also welcome and encouraged, as are short vignettes and thought experiments humanizing our shared past. You may consider exercising your archaeological imagination by reading a narrative document addressing either a pre/historic theme or a larger metadata-style discourse on living as an archaeologist in order to tell the story behind the story accompanied by an image collage.

ABSTRACTS

1 THE STORIES WE TELL (AND SOME MAYBE WE SHOULDN'T)

Abstract author(s): Walsh, Matthew (National Museum of Denmark)

Abstract format: Oral

As archaeologists, we often live pretty exciting lives. Many of us travel a lot. Some of us do so to quite remarkable, isolated and even exotic – sometimes dangerous – places. We navigate diverse cultures, we meet unique and interesting people. We contend with the stingy-bitey-crawly kinds of animals, and we get very, very dirty. While this is all true, these moments of excitement are often mere punctuation marks in otherwise mundane, academic, and even boring lives. As exciting as things get for some of us, we more often than not find ourselves with our noses in books or paperwork than we do discovering lost cities or unearthing forgotten treasures. But, let's keep that our little secret, shall we? This presentation will discuss the author's own experience learning the value (and the perils) of keeping a field journal. It illuminates the insights to be gained from taking an explicitly personal and non-academic perspective on our experiences of archaeological fieldwork. It highlights the introspective power that can come from revisiting and remem-

bering – sometimes even regretting, but hopefully learning-from – our times spent in and out of the one-by-one. Ultimately, in the author's view, preserving, confronting and thinking with these moments and memories and the ways in which we record them makes us not just better archaeologists but with any luck better people. That said, maybe don't share that part on page 72?

2 FROM BARROW WITH LOVE: STORIES OF KURGANS DURING EXCAVATIONS

Abstract author(s): Teslenko, Dmytro (State intertainment)

Abstract format: Oral

Over the last 5 years the team of the Dnieper archaeological expedition of the Protective Archaeological Service of Ukraine has been constantly faced with the need to communicate with people interested in archaeology. This happened directly during excavations, during the display of artefacts at exhibitions or during participation in historical festivals. For example, during the 2021 survey of the Novoalexandrovka mound, around 2,000 people visited the excavation site every weekend. As a result, one of the team members had to work as a guide.

I would like to share this experience. Firstly, most people perceive the work of archaeologists as a treasure hunt, and in addition to questions about dinosaurs and engineered buildings, they ask: "how much gold did you dig up?", or "do you keep something for yourself?" Secondly, the attendees have little or no knowledge of ancient history and archaeology. Finally, there is even less understanding of the work of an archaeologist and the question "how do you discover artefacts or burials in kurgans?" remain among the most topical.

For successful communication with listeners, the style of an archaeological publication proved totally useless. The stories at the onset were based on an interpretation of the archaeological records. The use of absolute dating also proved ineffective. Much clearer were the maxims like: "when no pyramids were yet built in Egypt", or "two thousand years before the Scythians". The final narrative was more akin to History of Spain by Arturo Perez-Reverte, rather than an archaeological text.

This communication led to several projects, the first of which was the creation of social media and YouTube channels. The second initiative was the development of project documentation for the creation of archaeological landscape parks with the museumification of part of the archaeological sites.

Unfortunately, these projects were halted because of the war.

3 READING FROM GRAPHIC NOVEL „PFOSTENLOCH" ("POST HOLE")

Abstract author(s): Heller, Daniela (none)

Abstract format: Oral

Summer, somewhere in southern Germany: Two young women are working on an archaeological excavation during the semester break. Between tarps, barrows and curious onlookers, they uncover the remains of an Iron Age settlement: post holes, the last traces of long-gone wooden houses in the earth. While the two friends dig through layer after layer of human pasts, their thoughts revolve around their uncertain professional future. When a position suddenly becomes vacant on the excavation, an unwanted rivalry arises between them, which puts their friendship to the test. And it's not just remains of Iron Age houses that are being unearthed - buried memories and repressed grief also come to light.

Post hole" (original German title: "Pfostenloch") is a story about friendship, archeology and people's remains - in the earth and in memory. It also asks the question of what it actually is that archaeologists are searching for and what it is they find.

I developed this graphic novel as my graduation project at the Art Academy of Kassel (Germany) where I studied visual communication with a focus on comics and illustration after studying and graduating in prehistoric archeology and spending some time on excavations. The book was released in 2022 by the Berlin comic publisher avant-verlag. In the same year, it won a prize for the best comic debut at the International Comic Salon in Erlangen, which is considered the most important German festival for comics and graphic literature.

I wanted my comic to deal with the less glamorous aspects of field archaeology while also working with humour and targeting archaeologists and non-archaeologists alike.

I propose to do a reading of a translated extract from the graphic novel with sound effects and an overhead projection.

4 THE MYSTERIOUS AFFAIR IN ARCHAEOLOGY OR WHAT IF POIROT WAS AN ARCHAEOLOGIST

Abstract author(s): Baca, Martin (Department of Archaeology, Faculty of Arts, Comenius University in Bratislava)

Abstract format: Oral

„You would have made a good archaeologist, Mr. Poirot. You have the gift of re-creating the past“ (A. Christie - Murder in Mesopotamia, 1936)

Since I was a kid I loved stories in which the famous Belgian detective Hercule Poirot solves numerous sophisticated murders, whether it was in a movie or in a novel. Of course, I know that I am not the only fan – Poirot became an iconic detective figure since Agatha Christie introduced him to popular culture more than a century ago, and his popularity certainly did not wane. When I started my profession as an archaeologist, I began to wonder whether we (archaeologists) could learn something from the perspective of A. Christie writing. Most of us know, that Christie was engaged in archaeology to some extent and undoubtedly helped to popularise it in her famous novels such as *Death on the Nile* or *Murder in Mesopotamia*. The most interesting thing for me is, however, the way in which Poirot at the end of every novel/movie always presents his final thoughts to a small crowd of rather nervous suspects. The detective-like evaluation of facts is something that was often compared with the archaeological methodology. But equally interesting is that Poirot's evaluation of the chain of evidence is at the end always assisted by very engaging narration. This is probably the most crucial part of each novel/movie where Poirot is the leading character because it enables the reader/viewer to finally understand the very complex background of every investigated crime. In this paper, I will discuss whether archaeologists could learn something from this, respectively from A. Christie and especially from the works starring her most famous detective.

5 BEING SOMEONE ELSE: SELFHOOD AND THE PREHISTORIC IMAGINATION

Abstract author(s): Taylor, Timothy (Comenius University in Bratislava; *Journal of World Prehistory*)

Abstract format: Oral

This presentation is designed to amplify the insight of Alexander von Humboldt that facts are valueless without an imaginative conception, and that any imaginative concept only becomes valuable once it can be dignified by facts. How we imagine depends on how we have experienced the world. In 'Oneself as Another', Paul Ricoeur argued that being able to self-critically reflect on ourselves (as seen somehow from an outside perspective) was a foundation of deepening ethical commitment. The ability to put oneself in another person's position in no sense signals a susceptibility to relativism; it may offer a contrary opportunity: to increase objectivity (even if that objectivity is complexified – as viewpoint theory suggests it must be). Archaeology does not simply demand a Giddens-style double hermeneutic, where the society of the self is under review, and data is gathered to describe and also change what is described. It is clearly more ambitious than the Malinowskian–Geertzian thick description, as (mostly) its actual subjects are a priori no longer extant (and, in prehistoric contexts, beyond any direct record of thoughts expressed through language). Assessing how far we can undertake any praxeology for such past contexts is thus a major challenge. One possible approach is through materiality theory, and the apprehension of our artefact data as having potential to retain many original affordances. Through playing out the past, in concrete physical reconstructions, in our heads, or in virtual environments, we can better invent and imagine scenarios with points of possible consilience (equifinalities at least) with archaeological materials. Following Alison Wylie's recommendations for source- and subject-side analytical work, it has to be possible to convincingly transform one type of data into another, and replace earlier and less tethered conceptions with more objective kinds of imagination. This has significant implications for museum display interpretation and public outreach.

6 IF I WERE TO VISIT A TAVERN IN 1650 HOLLAND, WOULD I BE ALLOWED TO ENTER?

Abstract author(s): Schelvis, Morgan (University of Amsterdam)

Abstract format: Oral

The consensus is 'probably not', because I am a woman (and because I am not a time traveller).

Seventeenth-century Holland taverns were (semi)public spaces where people could sit and drink whenever the hosts were awake. Due to the public nature of these drinking houses, they became centres of social, political, and business activities from medieval times onwards. The day-to-day social structure in seventeenth-century Holland was in part shaped around its taverns. In Dutch historical archaeology it is generally accepted that the tavern was an exclusively male space with few exceptions. I challenge this notion: I see the seventeenth-century Holland tavern as a mixed gendered space with few exceptions.

When it comes to women's participation in the tavern's social structure, there is a lack of focus in the available literature. Important Dutch historical works about taverns do not explore the possibility of women as patrons, but predominantly explore women as workers and wives and make it clear that the tavern was a male space in which women sometimes existed.

In this presentation, I take you through a figurative journey back in time to showcase how our understanding of the tavern changes by creatively exploring them from a woman's perspective. Intentionally looking at the past through the lens of imagination and storytelling is an important exercise we, as archaeologists, should be doing more of. It helps us think critically about the past and who we include and exclude in our understandings of the past.

I wrote a story about two women who lived approximately 370 years ago. We get to know Jannetje, a farmer in a village, and Geertje, a housewife living in a city. By looking at their day-to-day lives, we gain a better understanding of the inner workings of the tavern as a mixed gendered space.

7 INTERACTIVE STORYTELLING - INTERPRETATION OF CULTURAL HERITAGE

Abstract author(s): Abonyi, Zsanett (Budapesti Történeti Múzeum/ Budapest History Museum)

Abstract format: Oral

The role of museums has become more diversified than ever before. Museums must be places for the transferring of knowledge and must respond to the expectations of the modern world. In addition to their professional responsibilities, the archaeologist must also help to create value from both the tangible and intangible assets of the past. While it is acknowledged that museums are forums for public education, they are also venues for entertainment and must strive to bring a level of engagement that motivates learning, while also providing an enjoyable experience. This 'edu-tainment' should up new perspectives the museum to engage with fantasies, new narratives, and step out from the comfort zone to find new solutions for engagement.

Regular archaeological excavations have been carried out in the territory of Budapest for almost 150 years. It is high time that our museum focus on better communicating the preserved heritage of the past in creative and more engaging ways. Since 2018, we have been endeavoring to develop more informal ways of presenting archaeological news and stories through, e.g. the use of short videos and live-streaming through social media platforms. But, even beyond this, the Living Aquincum Project is a remarkable undertaking in these regards. The project revives the ancient city of Aquincum as an alternative parallel world during the main museum's events. This world is represented by reenactors and based on historical and archaeological sources. It works with the method of living history on site as well as online and as a new initiative aims to bring an authentic interpretation of the past. As such, it must straddle the fine line between accuracy and amusement. This exceptional project keeps things fun and fresh while striving to provide an experience at the intersection of connection, learning and enjoyment for anyone who walks through the museum doors.

8 THE PYLOS COMBAT AGATE

Abstract author(s): Wood, Florence (-)

Abstract format: Oral

In 2015, archaeologists Jack Davis and Sharon Stocker were working on the site of Nestor's Palace in Crete when they discovered the shaft tomb of a Mycenaean warrior. The tomb, dated to 1450 BC, is now known as the 'Griffin Warrior Tomb'. Without doubt the Griffin Warrior was wealthy and of great social standing for not only was he buried in a single grave, unusual for that time, but he was surrounded with more than 3000 artefacts. These included a sword, a sword pommel, gold rings, silver cups, beads and ivory combs. Also amongst them was a small carved agate, 3.6 cm long and some 2 cm high, which became known as the Pylos Combat Agate because of the three warriors delicately carved upon it. There are two scenes carved on the Agate. At bottom left, there is a dead warrior lying on his back, knee raised, and large shield beneath him. A breastplate floats above his body. Two warriors dominating the scenario are engaged in mortal combat. The attacking warrior is poised on a muscular leg, his face contorted with rage. The other is protected by a large, bossed shield, his throat exposed, and his face turned away from the fatal blow of his assailant's two-edged sword. The two scenes faithfully reconstruct the death of Achilles' friend Patroclus by Hector and the subsequent death of Hector by the vengeful Achilles, as graphically told in Homer's Iliad some 700 years later.

Did the Griffin Warrior know of these ancient stories and, if so, did he see himself as the mighty conquering Achilles? The riches of this carefully constructed shaft grave suggest that his followers certainly did, for the Combat Warrior Seal along with other precious artefacts was placed carefully about his rib cage.

9 THE NARRATIVE AND THE INDIGENOUS WORLD IN THE EDUCATIONAL CONTEXT: THE GUANCHE MEMORIES FROM TENERIFE AS A CASE STUDY

Abstract author(s): Farrujia de la Rosa, Jose (Universidad de La Laguna)

Abstract format: Oral

In this paper we present a didactic project for compulsory education in Spain, focused on the indigenous or Guanche world of Tenerife, in the Canary Islands.

The Canary Islands archipelago was conquered and colonised by Europeans during the 15th century and, as a consequence of cultural ethnocide, the indigenous world gradually disappeared. Unlike to what happened in the American context, the indigenous communities of the Canary Islands did not bequeath us the so-called "visions of the vanquished", as the oral and unwritten tradition predominated among them.

This project, based on illustrated historical narrative, recovers the knowledge about the indigenous world of the Canary Islands. Based on texts written within this project in the form of first-person testimonies, a series of indigenous

characters, both male and female, who existed in the 16th century, enable us to recreate their world, the effects of colonisation and their evolution in the early years of the colonial period. The stories have been written on the basis of archaeological research and documentation generated by the European conquerors in the 16th century. The educational project, in this sense, is based on literary recreation to bring students closer to the reality of the indigenous heritage of the island of Tenerife, and to address aspects such as equality, multiculturalism and the development of skills in cultural expressions. The project also aims to incorporate this theme in order to fill the gaps that exist in the official curriculum at this educational stage.

10 EDUBBA'A – THE THEATRICAL STAGING OF SUMERIAN LITERATURE

Abstract author(s): Borkowski, Sebastian - Marti, Cynthia (University of Bern)

Abstract format: Oral

The play *Edubbā'a* ('At School') was first performed in 2022 at the 75th anniversary of the Swiss Academy for Humanities and Social Sciences in Bern, Switzerland. The literary source of the play is a nearly 4000-year-old Sumerian narrative from Mesopotamia copied by apprentice scribes in the Old Babylonian period. The story revolves around everyday life in the *Edubbā'a*, the Mesopotamian school. Protagonist and first-person narrator is a pupil who is bullied by his teachers and finally persuades his father to use bribery to convince the headmaster of his talent in writing.

Staging the play was an interdisciplinary project, involving students and doctoral students from the Institute of Archaeological Sciences of the University of Bern and hobby actors. The play was preceded by a short film adaptation of the same literary source in 2018. Since then, a seminar on ancient textiles and fashion taught in collaboration with the Institute of Art History of the University of Bern discussed and designed costumes according to ancient visual and textual sources. A second seminar critically reviewed the reception of ancient West Asian history and material culture in theatre and film productions.

The project had the aim to teach students about the processes and relevance of public outreach and to educate a broad public audience about Sumerian language as well as Old Babylonian literature and material culture in a creative and entertaining way. Through the performative reconstruction of everyday school life in ancient Mesopotamia, furthermore, we intended to stimulate an intercultural dialogue about childhood and education in ancient and modern times.

Edubbā'a is a playful approach to philological and archaeological sources that loosens up the otherwise very academic discussion. A film adaptation of the play is currently under development in order to reach a larger public audience and to document the project for future teaching.

181 SCIENCE, NOT SCIENTISM, IN EXPERIMENTAL ARCHAEOLOGY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Schenck, Tine (Mesolithic Resource Group; ArchaeologistsEngage) - Lundström, Fredrik (Department of Archaeology and Classical Studies, Stockholm University)

Session format: Regular session

Experimental archaeology has long relied on methodological ideals of the natural sciences. Some have gone as far as to state that the ideal experimental methodology should be based on experimental physics (P. Reynolds "The nature of experiment in archaeology" 1999). As scientific techniques have exploded onto the archaeological scene, experimental archaeologists seem to increasingly strive for variable control and quantified results. But how does this trend affect experimental results in a larger, archaeological context?

Natural sciences founded on positivist ideals opens a vast tool box for experimental archaeologists. However, those sciences do not necessarily mesh with current archaeological epistemologies. This leads to a dichotomy of ideals, and how we connect positivist results to the actual people of the past is crucial. For scientific results to have any validity in the archaeological discourse, results have to comply both with the archaeological record and link to what it is to be an embodied human. Still, many controlled experimental studies stop at their results without further contextualisation, thus falling into the trap of scientism. Additionally, experimenters look less to other forms of scientific experimentation that have humans at the centre, such as psychological experiments, as an alternative way to conduct an experimental protocol.

We suggest that all these scientific techniques are invaluable tools for experimental archaeology that can be taken into a human context, providing a synergy effect that can give innovative new results. This session seeks to explore how experimental archaeologists can apply science in a thoughtful way, without sacrificing the connection to people who lived, their bodies, minds, and knowledge of the world.

We invite speakers to present:

- Experimental studies that display thoughtful application of scientific results to a human context
- Theoretical/methodological approaches to the application of science in experimental archaeology

- The use of alternative, scientific experiment protocols

ABSTRACTS

1 USING EXPERIMENTAL ARCHAEOLOGY ALONGSIDE POST-HUMANIST-ONTOLOGY WHEN AIMING TO UNDERSTAND MATERIAL PROPERTIES, THEIR EFFECT AND AFFECT, AND THE PROCESS OF MAKING

Abstract author(s): Roy, Amber (Stockholm University)

Abstract format: Oral

Experimental archaeology has been used to assess a multitude of hypothesis and research questions and spans a broad range of applications, from quantitative lab-based approaches to those which are “real world” based.

Material properties will always affect the way an artefact was manufactured and used since aspects such as hardness, friability, and strength will influence the *Chaîne opératoire* and set boundaries for functional possibilities. Experimental archaeology and use-wear analysis, particularly when applied together, are valuable methods to assess events in the life history or itineraries of artefacts, such as episodes of manufacture, treatment, repair and use. Yet, we can go further, building upon such methods to add additional data on material properties which will contribute new strands of evidence. Such as, by carrying out experiments to test the effect of mechanical and material properties on the manufacture and use of artefacts.

Furthermore, the affect of material can also be understood experientially and theoretically, using practical experiments, such as when manufacturing an artefact. For instance, the application of experiential and ontological approaches, drawing on post-humanistic thought, has the potential to reveal the processes associated with the manufacture or use of artefacts as well as information about those people who interacted with them which is not easily available when applying traditional experimental archaeological methods and can be combined with data from the latter to gain a broader insight into the past.

This paper will use research on British Early Bronze Age stone battle-axes and axe-hammers and an ongoing project looking at Swedish Middle Neolithic B stone battle-axes to discuss a mechanical, experimental, experiential and ontological theoretical approach/es which combines both the major and minor sciences and aims to introduce new understandings of the effect and affect of certain artefacts through their material.

2 CONNECTING PAST AND PRESENT ACTORS THROUGH EXPERIMENTS AND SCIENTIFIC ANALYSIS: THE LATE NEOLITHIC WETLAND PEOPLE OF THE RHINE MEUSE DELTA

Abstract author(s): van Gijn, Annelou (Faculty of Archaeology, Leiden University)

Abstract format: Oral

Experimental archaeology is crucial to bring people of the past and the present together. This is especially so when we focus on the details of daily life, something that everyone can relate to: what kind of recipes did people cook, where could they have slept, what kind of things did they make and with which tools, and how did they move about the surrounding landscape to obtain food and raw materials? In the context of an interdisciplinary project we organize workshops in which both archaeological scientists, craftspeople and volunteers of the educational archaeological center of Masamuda near Rotterdam (Netherlands) are partaking and interacting (www.puttinglife.com and <https://exarc.net/cooperation/late-neolithic-houses>) (NWO AIB.19.020). During these experimental sessions we obtain ever more detailed and intimate knowledge about materials, technological processes and tools that could have been relevant in the past. By combining these experiences and insights with scientific approaches like microwear analysis of toolkits (flint, bone, pottery etc.), palaeobotanical research and organic residue analysis, we can come closer to how people lived in the past. This continuous dialogue between experiments (both quantitative and explorative) and laboratory analyses have led to detailed visualizations of past life in the Dutch Rhine Meuse delta during the Late Neolithic Vlaardingingen period, made by the team's artist. These visualizations are in turn inviting a continuing dialogue, both between present-day participants, but also with the people in the past, leading to a connectedness and empathy between past and present actors.

3 PROJECTILE AS PROBE -AN EXPERIMENTAL ARCHAEOLOGICAL PILOT STUDY ON THE ROLE OF PERCEPTION AND JUDGEMENT IN PROJECTILE POINT PERFORMANCE

Abstract author(s): Lundström, Fredrik (Stockholm University)

Abstract format: Oral

Projectile points are popular objects in experimental archaeological studies. Because of these studies, we have gained useful knowledge, especially on how function is constrained by point type. Yet, by their ability to capture subtle functional variables, new scientific techniques seem to make projectile experiments redundant. As a result of these techniques, digitized archaeological artefacts can be quantified and abstracted by various analytical procedures or simulated under controlled conditions. This data revolution appears to make archaeological experiments with idealised replicas redundant. However, for at least two reasons, the usefulness of data gained exclusively by digital techniques is very limited. Firstly, it is difficult to determine what minute point size and shape differences could have been meaningful in the situations where a projectile once was employed. Secondly, no simulation captures the almost unlimited number of variables that originally affected the point form. In common for both these problems is determining the role of environmental information processed by the persons that crafted and used the points in question. This paper addresses these problems through a pilot experimental archaeology study that combines, projectile delivery with psychophysics and cognitive psychology.

4 NEW APPROACHES IN EXPERIMENTAL AND COGNITIVE ARCHAEOLOGY

Abstract author(s): Lima-Olivera, Elena - Silva-Gago, María - Fernandez-Pestonit, Alba - Zaghi-Lara, Regina (INCIPIT, CSIC) - Blanco Rial, Manuel (University of Santiago de Compostela)

Abstract format: Oral

As the more traditional approaches to the study of human beings over time seem to be exhausted, new ways of exploring human behaviour are being developed, based on methodologies and techniques from disciplines such as neuroscience and psychology. For instance, eye tracking is applied in archaeology to investigate how material culture influences the way humans perceive the surrounded world. This method detects and measures eye positions, identifying the underlying patterns of visual behaviour based on the eye movement events, namely fixation and saccade system. Other applied techniques can be electroencephalography, which measures brain activity, and biometric sensing such as heartbeat or electrodermal activity. Therefore, the engagement of people to participate in experimental studies is needed in order to make inferences into the past. These experiments can reveal how humans construct inferences based on materiality that shape, and are shaped by, human cognition and action. In this sense, the behavioural response can be quantified and it can show changes that need to be contextualized according to the archaeological record. The XSCAPE project and the Material Minds Lab, funded by the European Research Council, constitute an example of this perspective. Through this combination of archaeological material and neuroscience, this project will provide the first fully integrated framework for understanding the cycles by which humans create and transform the landscapes, practices and artefacts that create and transform the human minds.

5 PAST AND PRESENT THROUGH THE LENS OF ACTIVE INFERENCE AND COMPUTATIONAL BIOLOGY

Abstract author(s): Valiño, Arturo (Instituto de Ciencias del Patrimonio - INCIPIT-CSIC, Santiago de Compostela) - Constant, Axel (Department of Engineering and Informatics, The University of Sussex) - Clark, Andy (Department of Engineering and Informatics, The University of Sussex; Department of Philosophy, The University of Sussex; Department of Philosophy, Macquarie University) - Criado-Boado, Felipe (Instituto de Ciencias del Patrimonio - INCIPIT-CSIC, Santiago de Compostela) - Martínez Otero, Luis (Instituto de Neurociencias de Alicante - CSIC-UMH)

Abstract format: Oral

Through the lens of active inference anything that opposes a resistance to the environment can be considered an adaptive system that reaches an equilibrium state with the environment by self-evidencing. This approach entails a formal approach to mathematically model cultural changes through time, where societies and material culture are, in essence, a reflection of each other.

We propose a theoretical framework that first models individuals, groups and societies as nested Markov chains that reach a dynamic equilibrium following active inference. And second, an experimental and simulated agent approach to understand what drives these changes. For this, a comparative cultural and biology approach becomes completely necessary. In short timescales, where functional brain dynamics adapt to the environment and can be measured using experimental techniques, an inter cultural approach is the way to understand the main parameters that drive changes through time. Therefore, to measure and understand physiologically what drives cultural changes, we propose the use of a combination electrophysiological measurements; EEG recordings, eye tracking and data from wearable

sensor modules under subjects interacting with past and present materiality. In long timescales, in analogy with the visual nervous system, a comparative biology approach enables to detect biological constraints that clearly relate the dependency of the context and genetic background in how and what operations the cortex performs across different species, and thus enables to infer how this neuronal circuits were biologically realized through time.

In conclusion, the comparison of the landscape and material culture (pottery, buildings and other materials found in archeological record) of past and modern humans, combined with our genetic background, is a perfectly valid framework to use an inter cultural and comparative biology approach to decipher what drives culture changes through time.

6 RIDING A HORSE - EXPERIMENTAL STUDIES PROVIDE NEW DATA ABOUT HORSE TACK IN THE VIKING AGE

Abstract author(s): Bagge, Merethe Schifter (Museum Skanderborg) - Nørgaard, Maria (Juelsminde Hestepraksis) - Pedersen, Anne (National Museum of Denmark)

Abstract format: Oral

A rare equestrian burial from the mid tenth century, Fregerslev II, was excavated in 2017 in eastern Jutland, Denmark. An impressive horse harness with hundreds of decorating fittings was found in the grave; in addition, the following laboratory micro-excavations revealed fragments of leather straps, fur and wood. The elaborate harness included a highly specialized bit, suggesting that the harness had not only been for display of wealth and status, but might also have had specific functional use enabling precise control of the horse.

To fully understand both the appearance and functionality of the harness, a project team including a researcher of Viking-age horse harness, the head of excavation and an equestrian veterinarian with both riding and experimental experience collaborated to reconstruct and test the harness.

Meticulous analyses of the preserved harness details and studies of contemporary depictions formed the basis of the reconstruction of the horse harness.

Using former research results of functional analyses and pressure tests of different types of modern horse bits, the function of the reconstructed bit was evaluated on a horse cranium and on a living horse, performing selected maneuvers with two different modern bits as reference. The maneuverability as well as the physical and behavioral reactions of the horse when ridden with the modern reference bits and the reconstructed bit, was closely evaluated and compared both by the veterinarian and an external professional rider.

This method of testing the functionality of specialized historical riding equipment has proved valuable on pilot study level in providing insights to the possible riding style and use of riding horses by the social elite in the Scandinavian Viking Age.

183 THE WHEEL HAS COME FULL CIRCLE: TECHNOLOGICAL CHOICE IN POTTERY PRODUCING COMMUNITIES OF CENTRAL AND NORTHERN EUROPE (100BC-800 AD)

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Borgers, Barbara (University of Vienna) - Willems, Sonja (Catholic University of Louvain; Museums for Art & History of Brussels) - Hawkins, Kayt (UCL Institute of Archaeology - ASE)

Session format: Regular session

This session aims to identify and assess the (dis)appearance of the pottery wheel as a technological innovation within central and northern Europe between 100 BC and 800 AD. As an important hub for trade networks, central and northern Europe is an interesting study region to assess how a technological invention, such as the pottery wheel, can alter society; why and how pottery wheel-throwing can be adopted by various craft communities and how important social interactions are in the assimilation of the new technique. In the case of central and northern Europe, the earliest as well as the latest stratigraphic contexts comprise both handmade and wheel-thrown pottery, yet the implications of such co-existing divergent technological traditions remain poorly understood. Why did some craft communities adopt the wheel-throwing technique, and why did others reject it?

While central and northern Europe is a valuable study region, a key objective of this session is to better understand the social interactions that facilitated technological knowledge transmission of pottery wheel-throwing within complex societies. Consequently, cross-cultural and cross-regional case studies outside the study region, which tackle the issue of how a technological innovation is assimilated in craft communities and assess the underlying dynamics and social networks, are invited. Research papers integrating theoretical perspectives on social interactions with compositional and technological studies, experimental archaeology or digital analytical tools are welcome. A comprehensive

reconstruction of pottery manufacturing processes combined with theory will permit to identify previously hidden social and dynamic networks of craft communities and highlight the connection between craft communities and society.

ABSTRACTS

1 USE OF THE POTTER'S WHEEL IN CHANGING SOCIO-ECONOMIC CONDITIONS OF THE LATE IRON AGE IN CENTRAL EUROPE

Abstract author(s): Ther, Richard - Mangel, Tomáš (University of Hradec Kralove)

Abstract format: Oral

The Late Iron Age covers the period from the beginning of the use of the potter's wheel in Central Europe to its temporary abandonment. During the period, technological novelties were evolving in the context of significant societal changes. The presented study compares the production of wheel-made pottery in three regions (central, western, and northwestern Bohemia, Czech Republic) with different settlement histories and changing socio-economic conditions. The analysis is focused on estimating the extent of application of the potter's wheel in the pottery forming sequence. It is based on a novel combination of the quantification of microstructure orientation in section analysis, computed tomography visualisation, and quantitative topographic analysis of the pottery surfaces. The discovered variability of pottery-forming methods is discussed in the context of the socio-economic development in the studied regions. The results indicate various mechanisms of cultural transmission which were at play in the evolution of technology in the Late Iron Age society.

2 OF POTS AND PEOPLE: APPROACHING SKILL, SETTLEMENT, AND EARLY ROMAN RURAL SOCIETY IN THE LOWER OUSE VALLEY, CAMBRIDGESHIRE, UK

Abstract author(s): Hudak, Eniko (Pre-Construct Archaeology Ltd; Newcastle University) - Sutton, Adam (MOLA Northampton)

Abstract format: Oral

A long and highly complex series of technological interactions characterises pottery-making in later Iron Age and early Roman southern Britain. Following its introduction in the later second or earlier first centuries BC, potter's wheel technology was used in diverse and highly socialised ways. Among communities who embraced it, the new technology became entangled with various novel styles of potting, some highly regionalised, as well as with other emerging technologies. In the decades after the Roman conquest of AD 43 these technologies began to manifest into archaeologically visible production sites, some of which were concerned with the production of specialised vessel types.

Conventional narratives of this period have tended to lean on economic factors and the direct impact of Roman conquest as interpretative frameworks, neglecting the study of social agency. This paper argues that we can do better. The authors will present analysis of the newly-discovered 'Lower Ouse Valley' potting complex (Cambridgeshire, UK), characterising pottery-making here as revealed through typological and archaeometric (petrographic, x-radiographic, and environmental) analyses. We will then contextualise the ceramic chaîne opératoire revealed by these analyses through a study of the structural remains of these first- and second-century AD pottery production sites, which were excavated as part of a single landscape-scale scheme of works. The result, we argue, is a rich understanding of how potting technology and technique continued to change several generations after the initial introduction of wheel technology, and even within communities who enthusiastically engaged with technological novelty. Key outcomes include the revelation of the heterogeneous ways in which wheel technology was used even in the production of a 'standardised' repertoire; the identification of different forms of technical knowledge, exchanged on multiple scales; and a consideration of how social and economic narratives may be more fruitfully interwoven in the study of ancient technology.

3 NON-DESTRUCTIVE SMALL-ANGLE NEUTRON SCATTERING (SANS) FOR THE DIFFERENTIATION OF WHEEL-BASED POTTERY FORMING TECHNIQUES: A CASE STUDY FROM 4TH-6TH C. PANNONIA

Abstract author(s): Gait, John - Bajnok, Katalin - Len, Adel (Centre for Energy Research, ELKH)

Abstract format: Oral

Differentiating wheel-throwing from other wheel-based forming techniques employed in pottery manufacture represents a significant technical challenge within archaeology. Composite techniques (e.g. 'wheel-coiling' / 'wheel-shaping'), in which a wheel is used to modify the shape or surface of initially hand-built forms, pose particular difficulties, as many of the physical characteristics of such forming (e.g. surface traces, vessel profiles) are difficult to differentiate from those produced by wheel-throwing alone. Attempts to utilise the orientation of objects (i.e. particles/voids)

within the fabric of vessels to differentiate wheel-based techniques (e.g. by thin section petrography or tomographic imaging) are also often hampered by the fine-texture of fabrics commonly used with such forming techniques, and/or by the desire to avoid destructive sampling.

To redress some of these difficulties, we introduce small-angle neutron scattering (SANS) as a non-destructive means of measuring the preferential orientation of micro- to nano-scale objects. Through extensive experimental studies we demonstrate that SANS may be used to differentiate a variety of forming techniques, including wheel-throwing, wheel-shaping (coiling+wheel), coil-building, and percussion-building/moulding.

The practical application of SANS is demonstrated with a case study of 4th-6th c. AD pottery from three archaeological sites located in the former province of Pannonia (Hungary). In the wider context of the disintegration of centralised Roman administration, the extent of social and economic continuity versus disruption and immigration, has often been measured in terms of the relative proportions of wheel-thrown (i.e. industrial, "Romanised") versus 'hand-made' (i.e. non-industrial, "Barbarian") pottery. However, such material dichotomies, may disguise more subtle changes occurring at this time, in which technological knowledge may have been transferred across apparent cultural/ethnic boundaries. Therefore, the ability to identify potential technological developments, such as composite forming techniques in particular, may in turn offer new insights into the nature of economic, social and cultural relations in late Roman / early Medieval Pannonia.

4 RECONSTRUCTING POTTERY FORMING PRACTICES AT THE MEDIEVAL TOWN OF UTRECHT, THE NETHERLANDS

Abstract author(s): Borgers, Barbara - Dockner, Martin (University of Vienna) - Griffioen, Arthur (Archeologisch Bureau Griffioen)

Abstract format: Oral

At the Medieval town of Utrecht, the Netherlands, potters manufactured ceramics between the 12th and the 15th centuries AD. Several workshops were located in the suburbs north and south of the Medieval town walls, along the Vecht and Vaartse Rijn Rivers. Potters used a fluvial clay for the manufacture of greyware and redware and seemed to have adopted different forming techniques through time: During the first production phase, they made greyware cooking jars by hand. Surface finishing applied at the leather-hard stage, however, obliterates the primary forming techniques of these jars. During later production phases, potters mainly manufactured wheel-thrown redware.

With the aim to reconstruct forming practices, this research combines observation of greyware and redware cooking jars at the macroscopic scale (e.g., visual inspection of surface features, X-ray microtomography) with examination at the microscopic and mesoscopic scales (e.g., grain and void orientation patterns in the cross-section of ceramic thin sections and scans of fresh breaks respectively). While the literature suggests that the change in forming techniques coincided with changes in users' households/domestic buildings, the results also permit to infer aspects of the organisation of pottery production at Utrecht during the Medieval era.

5 TECHNOLOGICAL CHANGE AND CONTINUITY IN POST-MEDIEVAL AND MODERN NUBIAN POTTERY FROM OLD DONGOLA

Abstract author(s): Franczyk, Boguslaw (Warsaw University, Department of Archaeology)

Abstract format: Oral

Quite a unique feature of post-medieval Nubian pottery is the disappearance of wheel made technology in favour of handmade pots on the one hand, and an increasing number of vessels forms and their multifunctionality on the other. Those technological changes correspond with political, cultural and economic changes in the region of Old Dongola. Nevertheless, some technological features and forms remain to modern times, indicating that knowledge transmission patterns have changed only partially. The major part of handmade pottery has been obtained during archaeological excavations in the Old Dongola citadel, within the ERC Starting Grant project "UMMA – Urban Metamorphosis of the community of a Medieval African capital city". The second part of the pottery has been collected during ethnographic research in the vicinity of the archaeological site.

For a better understanding of technological choices, the author decided to use a set of particular methods and analytical tools. Using thin-section petrography, traceological observations and thick-section analysis, diagnostic technological traces observed in macro-, mezo- and microscopical scale will be presented. The importance of thick-sections will be emphasized as a handy field method, which can provide a set of data for components orientation analysis in the vessels profile.

The author will also discuss the problem of asynchronous changes within the pottery assemblage, as observed in the disappearance of wheel made pottery and preservation of handmade pottery traditions – i.e., continuity and discontinuity of knowledge transmission. Technological changes, which are observed in ceramic materials, can be also perceived as a change in knowledge transmission, which corresponds to changes in society. Therefore, the constant

need for new tools and methods of analysis can improve our understanding of technological operations from the past, and following from this, the inference of a change or continuity within a society.

6 THE WHEEL-THROWING POTTERY AT THE BURIAL SITE IN OČKOV

Abstract author(s): Kalapáčová, Anna (Slovak Academy of Sciences)

Abstract format: Oral

In the village of Očkov located in South-Western Slovakia, a Germanic Urn burial site was excavated in the 50th. A large number of graves were destroyed in earlier periods, but the 245 graves were rescued (from stages B2/C1 to C3 of Eggers' Relative Chronology). It is assumed that more than 1,000 Urn graves may have been deposited in the burial site, making the Očkov burial site the largest Germanic necropolis from the Younger Roman period in Slovakia. Together with the nearby princely graves discovered at Krakovany-Stráže and the extensive settlement at Pobedim, it is evidence of the existence of an important Quadi economic and political center in the western part of Slovakia in this period.

In terms of the urn burial site is interesting to focus on the question of when the wheel-made pottery appeared as the urn in the Roman period in South-West Slovakia. Some of the graves show hand-made pottery as urns, others show wheel-made pottery. The main aim is to find the horizon of the beginning of the predominant use of wheel-made pottery as an urn. The main problem is the distinction between Roman-provincial pottery and domestic wheel-made pottery and the state of research with documentation of pottery workshops. The main arguments for a domestic origin are the common shape and ornamental features of plain Germanic pottery.

The paper summarized the problem of the wheel-throwing urns in Slovakia and point out some nuances with artifacts in particular graves and what role influences from the Roman provinces and Przeworsk culture played in this.

7 EXAMINING THE TRANSMISSION AND ADOPTION OF CERAMIC INNOVATIONS IN WESTERN ANATOLIA AND THE AEGEAN USING A CULTURAL EVOLUTIONARY FRAMEWORK

Abstract author(s): Alam, Christina (University College London)

Abstract format: Oral

During the Bronze Age, novel cultural traits were transmitted between potters in the Aegean, including pottery-making techniques that ethnographic research suggests were taught from parents to offspring. Following a phase of slow adoption, they were rapidly adopted in the context of palace/elite-consumed pottery. I investigate how geography, population size, and elite demand affected innovation adoption using cultural evolutionary theory and simulation models.

I simulate trait transmission through a network and explore 'toy' and 'realistic' models. Using toy models, I describe the dynamics emerging from the assumptions of the model, which incorporates the effects of travel costs, the local rate of innovation adoption (LRA, which serves as a measure of elite control over local adoption), population size, and random trait loss. Their outputs suggest that relative population clustering affects the shape of the adoption curve and that different combinations of travel costs, LRA, and population density result in spatial diffusion propagating along different types of wavefronts.

'Realistic' models are run on networks reflecting the Aegean's interesting geography, consisting of two land masses connected by an archipelago, with natural boundaries that create relatively isolated sub-populations; they additionally incorporate the effects of different landscape types and the location of the innovation's origin. Their outcomes are quantitatively compared to empirical adoption curves for the potter's wheel innovation and suggest that the location of origin can determine the shape of the curve, especially its position on the East – West axis defined by the land-masses of Greece and Anatolia.

The study showcases the potential of simulation modeling for addressing questions about cultural transmission using archaeological data. It shows that abstract models with empirically supported assumptions can be informative, even when the empirical data are recorded at varying levels of granularity and originate from a scholarly tradition resisting large-scale quantitative approaches.

MATERIAL WEALTH? NEW APPROACHES TO THE ARCHAEOLOGY OF SOCIAL INEQUALITY AND COMPLEXITY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Lawrence, Dan (Durham University) - Ortman, Scott (University of Colorado Boulder; Center for Collaborative Synthesis in Archaeology; Santa Fe Institute)

Session format: Regular session

Over the last decade, social inequality has emerged as a major research area in the historical sciences. New methods for assessing wealth and living standards from the archaeological record have been developed, from the use of Gini coefficients on artefactual and architectural data to bioarchaeological approaches to health and wellbeing. These have been marshalled to make comparisons at a variety of geographical and temporal scales, and to discuss the causes and consequences of inequality in a wide range of societies. Through this work, a series of tensions have emerged. Broad scale studies covering long periods and large areas have recognised a general trend towards increasing inequality over time, often correlated with societal scale and levels of social development (broadly conceived), leading some to argue that complexity and inequality are functionally linked. However, more detailed studies have identified significant variability within this general trajectory, including cases where inequality is low despite high levels of material wealth, population and/or population density, and periods where inequality has decreased.

In this session we seek to deepen understanding of relationships between inequality, scale, living standards, and institutions. All of these are contested concepts, and data relating to them are not straightforward to extract from the archaeological record. As a result, we also focus on methodological innovation. We seek papers which address one or more of the following questions:

- What are the strengths and weaknesses of quantitative approaches to inequality, such as Gini coefficients or cumulative distributions based on specific measures?
- What are good proxies for measuring living standards within and between societies?
- What social mechanisms have been responsible for increasing or reducing inequality in past societies?
- Are there general relationships between societal scale, social development, and levels of inequality? How strong are these relationships?
- What are the long-term consequences of social inequality for human societies?

ABSTRACTS

1 THE FARMING-INEQUALITY NEXUS, REVISITED: NEW INSIGHTS FROM THE GINI PROJECT

Abstract author(s): Bogaard, Amy (School of Archaeology, University of Oxford; Santa Fe Institute) - Cruz, Pablo (UE CISOR, CONICET-UNJu)

Abstract format: Oral

In this talk we revisit the hypothesis that farming systems where production is limited by heritable material wealth (such as land) are associated with higher persistent levels of wealth inequality than systems where production is limited by (free) human labour. In previous work on western Eurasia, expansive 'land-limited' farming systems facilitated by animal traction were found to be associated with higher sustained levels of household inequality than smaller scale farming systems reliant on human labour ('labour-limited'). New results from the ongoing GINI project (The Global Dynamics of INequality) expand the dataset on past household inequality in western Eurasia and in other world regions with very different agroecologies. We focus on case studies where archaeobotanical and/or preserved landscape features offer unusually clear insights into the nature of farming practice. These include remarkably intact agricultural landscapes in the southern Andes. In this cold and arid high-altitude setting, pre-Inka societies developed a form of labour-limited agriculture. This regime changed abruptly with Inka colonization in the 15th century to a form of land-limited agriculture through forced labour. This agricultural trajectory continued under Spanish colonial rule, introducing use of animal traction along with new crops and domestic animals.

2 SOCIAL PRACTICES AND INEQUALITY MEASUREMENT IN PRE-HISPANIC POLITIES: DIACHRONIC NOTES FROM SOUTHERN ANDES

Abstract author(s): López Lillo, Jordi A. (INCIPIIT-CSIC; Universitat d'Alacant) - Franco Salvi, Valeria L. (IDH-CONICET; Universidad Nacional de Córdoba) - Salazar, Julián (IEH-CONICET; Universidad Nacional de Córdoba) - Cruz, Pablo José (UE CISOR-CONICET; Universidad Nacional de Jujuy)

Abstract format: Oral

This communication seeks to explore political organization and dynamics from a comparative perspective over time, relying on three case studies which cover the so-called Formative (500 BC-AD 600), Regional Development (AD

1200-1450) and Late or Inca Periods (AD 1450-1550) in Northwest Argentina and South Bolivia. In each case, samples of several hundreds of residential units were used to calculate Gini coefficients; disaggregating them, additionally, by the different types of roofed and open surfaces within households. These analyses were then densified and put in perspective taking into account further archaeological records, as their crop fields, burials and other material indicators sensible to social inequality, in order to get a better understanding of each political configuration. As a result, it seems not only that, unlike those in Central Andes, the social processes that took place in this southern part led to the formation of agropastoral societies with low levels of centralization and wealth inequality during the Second Millennium BC, but also that the egalitarian polities of the First Millennium were far more complex and perhaps even internally competitive than assumed.

3 **SITES, SYSTEMS AND STATES: EXPLORING LONG TERM TRENDS IN WEALTH INEQUALITY AND SOCIAL COMPLEXITY IN ANCIENT SOUTHWEST ASIA**

Abstract author(s): Lawrence, Dan (Durham University) - Tumolo, Valentina (Università degli Studi della Tuscia, Viterbo; University of California, Berkely; Durham University) - Basri, Pertev - Chelazzi, Francesca (Durham University)

Abstract format: Oral

In this paper we seek to understand the relationship between wealth inequality and social complexity over the long-term in Southwest Asia. We apply Gini coefficients to house size and storage volume data to investigate trends in wealth inequality at a variety of temporal and spatial scales. We then compare these trends with those for a range of proxies commonly related to social complexity, including overall population, levels of settlement hierarchy and evidence for political centralisation and landscape modification. Our results show that inequality increased from the Neolithic to the Iron Age, with distinct regional trajectories. We see a step change in levels of inequality around the time of the emergence of urban sites in each region, but initially urban and rural sites were similarly unequal, suggesting that, outside the elite, the inhabitants of each enjoyed a similar range of wealth. The situation changes during the Iron Age, when inequality in urban environments increases and rural sites become both poorer in absolute terms and more equal. This coincides with a new level of landscape coordination and management, including an unprecedented phase of settlement dispersal and the construction of large-scale irrigation schemes. We therefore argue that the shift from inequality operating at a site scale to a settlement system scale may be related to the operational and integrative capacities of ancient polities.

4 **MONEY, MASS AND MEASUREMENT: OR, HOW CAN AN ARCHAEOLOGY OF QUANTIFICATION CLARIFY THE LONG-TERM DYNAMICS OF INEQUALITY?**

Abstract author(s): Green, Adam (University of York) - Wilkinson, Toby (University of Cambridge) - Wilkinson, Darryl (Dartmouth College)

Abstract format: Oral

Inequality is, fundamentally, control over other peoples' labour. It is much easier to control someone else's labour if you can monopolise the means of measuring it. This is why, in 1972's *Stone Age Economics*, the anthropologist Marshall Sahlins argued that it was the "instrumentalisation" of exchange that separated economies based on reciprocity from those based on trade. Or, in the neo-evolutionary typologies, quantification of exchange separated egalitarian economies from inegalitarian ones. It is ironic that at the same time as Sahlins argued that quantification created inequalities, "monetarist" economists argued that their governments should only use money to quantify an economy's supply. Their proposal was a dramatic break from Keynes' suggestion that sufficient money should be produced to quantify an economy's demand. A half century on, with inflation raging and inequality spiking, it is clear that the macro-effects of economic quantification remain only half-grasped (or conveniently forgotten). In the space between anthropology and economics we find a centuries-old debate about the source of money's value—is it the mass of material it represents, as believed by advocates of the gold standard? Or is it something else money quantifies? Is money a neutral entity or politically loaded? How far into the past does monetary behaviour go? Here, archaeology has an important role to play. The half century that has passed since Sahlins first published his typology has been marked by a substantial increase in archaeological data about how past human economies measured their material worlds. In discussing the origins of money and measurement, we theorise how different regimes of quantification have increased (and decreased) inequality over the millennia.

5 SIGNIFICANT CHANGES? THE DEVELOPMENT OF SOCIAL INEQUALITY DURING THE PREHISTORY IN THE CARPATHIAN BASIN

Abstract author(s): Wilkes, Fynn (ROOTS Cluster of Excellence; Christian-Albrechts-Universität zu Kiel)

Abstract format: Oral

Social inequality is often studied either on households or on graves. For Europe, there is a lack of quantitative studies that analyse the development of prehistoric social inequality on a larger scale with the help of established methods (Gini index). The Carpathian Basin offers the opportunity to study the development of social inequality between the Neolithic and the Bronze Age on a larger scale and on household and graves. The work presented here is an ongoing dissertation project that aims to examine the development of social inequality from the site to the local and regional levels and to discuss this development in relation to contemporary processes (settlement development, environmental changes, migration). The talk presents an analysis of two different types of wealth inequality, showing the development of material wealth inequality based on households and relational wealth inequality based on burials. In addition to a discussion of the changes in inequality and influencing processes over time, the talk will address the quantitative approach, its results and the consequences in dealing with often weak archaeological data sets.

6 ON THE MOUNDS OF INEQUALITY: WHAT BURIAL MOUNDS REVEAL ABOUT THE WEALTHY IN PREHISTORICAL CENTRAL EUROPE

Abstract author(s): Laabs, Julian (Kiel University; CRC1266) - Marzian, Johannes (Kiel Institute for the World Economy) - Müller, Johannes (Kiel University; CRC1266; ROOTS) - Requate, Till (Kiel University; ROOTS)

Abstract format: Oral

There is a growing literature on the development of inequality in prehistory. However, the overall picture is still fuzzy, as detailed evidence from many regions and periods around the world is still lacking. To help complete the picture, we created a dataset by coding rich information from archaeological records on single-funeral burial mounds in prehistoric Central Europe. The dataset contains about 5,000 observations and covers the period from 4000-0 BCE, with a possible temporal resolution of 200 years. Our analyses focus on a particular segment of the population – namely, the segment of those individuals who were buried in burial mounds. This societal segment, we argue, represents an upper part of the social wealth distribution, since the act of building a burial mounds shows the relational wealth and social capital of the deceased and its associated group necessary to mobilize labor and economic goods for such an endeavor.

Employing the volume of a burial mound as a proxy for the social wealth of a buried individual, we find an increasing trend in social inequality over time. The increase, however, is not linear and shows phases of significant increase, stagnation and decrease. Our results show that there is no clear relationship between social inequality among the upper societal segment and other trends in the population, except a general increase. For certain periods, changes in social inequality and changes in other proxy time series, representing population size (e.g. abundance of graves), climate events or sociopolitical organization (e.g. size of collective acting group, conflict), are identical, but there is no consistent pattern, yet.

With providing a time granular, big-picture overview of social inequality in the upper societal segment in prehistoric Central Europe, we could show that inequality among this segment seems to be decoupled from other trends in society.

7 BURIALS, LAKE DWELLINGS AND TRADE ROUTES. THE DEVELOPMENT OF SOCIAL STRUCTURES DURING EARLY BRONZE AGE AT THE CENTRAL ALPS

Abstract author(s): Brunner, Mirco (Institute of Archaeological Sciences, University of Bern; Oeschger Centre for Climate Change Research - OCCR, University of Bern)

Abstract format: Oral

This paper offers a detailed summary of the state of Early Bronze Age research in Switzerland between the Swiss Plateau and the alpine region and introduces important grave, hoard and settlement finds. During the Early Bronze Age a large number of rich Bronze Age burials appear in Western Switzerland often connected to the emergence of bronze metallurgy and the exploitation of local ore deposits. Those graves display burial costumes and include material culture, especially bronze artefacts, which shows close relations to trans-European way of expressing prestige and status. The development of bronze consumption during the three phases of the Bronze Age at the central Alpine Area will be discussed.

In the Pre-phase (BzA1), 2200 to 2000 BC, metal finds like oar-headed pins and daggers remain scarce. Only during the classic phase (BzA2) between 1900 to 1750 BC outstandingly wealthy graves can be recognized, like Thun-Renzenbühl. Considerably more graves occur; the first hoard finds are deposited at this time. Additionally,

gender distinctions in the burial rite become more regular and is visible in the burial equipment. The spatial extension and increasing density of settlements in prealpine areas and alpine valleys indicate the importance of the access to trade routes and resources. This development is backed by dendro and 14C dates from lakeshore and hilltop settlements. Between 1750 and 1550 BC gender-specific grave assemblages show strong contacts to Central Europe. The phenomenon of exceptionally well-equipped male graves is striking. It is discussed whether these are »young leaders« or assemblages of prosperous families.

Although we see an increasing rise in inequality in the realm of burial costumes the development of Alpine settlement dynamics, subsistence and metallurgy is a complex process that must not be subsumed to social evolutionist models of the evolution of hierarchical society.

8 QUANTIFYING HOUSEHOLD INEQUALITY IN MIDDLE HELLADIC GREECE

Abstract author(s): de Raaff, Yannick (Gothenburg University)

Abstract format: Oral

The Middle Helladic period (ca. 2000-1700 BCE) on the southern Greek mainland is generally considered a static period of relative poverty and isolation. It was kinship-based and egalitarian, with no monumental architecture or other expressions of wealth, until these societies rapidly transformed into ranked and competitive early Mycenaean polities (ca. 1800-1600 BCE). Recent studies have argued that this interpretation of Middle Helladic Greece is overly simplistic: change did take place, local communities were not disconnected from wider Aegean networks, and, although not visually impressive, a general increase in the durability, quality and complexity of construction of houses has been discerned. In this paper, I explore the notion of household inequality within these pre-Mycenaean communities.

My discussion is based on the comparison of Gini coefficient of a sample of ca. 100 domestic structures from the so-called Early Helladic III – LH I period (ca. 2200-1600 BCE) excavated across the Greek mainland. In particular, I explore the logic that governed the construction of the generally small dwellings that may explain the limited variation among them: is this a reflection of general poverty, the result of social rules that prevent ostentatious gestures, little community cooperation, small households, landscape limitations, or economic activities outside instead of inside the dwelling? Can house sizes in this time and place be taken as a solid indicator of household wealth?

9 SCYTHIAN BURIAL COMPLEXITY AND THE DYNAMICS OF CHANGE IN THE CLASSICAL PERIOD

Abstract author(s): Demina, Alisa (National University of Kyiv-Mohyla academy)

Abstract format: Oral

Though funerary customs are considered to be a rather conservative aspect of culture, the dynamics of their change often correlate with the agency the burials possess. The political significance of Scythian kurgans and their “ancestors” is well-illustrated in Herodotus’ description of the Persian invasion, but most importantly, has been explored archaeologically through the complexity of the mortuary practice. A particular example is the series of major events in the Scythian burial rite between 500 and 300 BC that are mainly associated with the emergence of “Princely” barrows in the Pontic Steppe region. This research aims to contribute to the question of whether their funerary display of power reflected the corresponding change in wealth distribution.

It primarily focuses on the two neighboring groups of kurgans in the Northern Azov sea region: the basins of Molochna and Kalmius rivers, where several necropoleis functioned during the entire Classical period. To examine the interaction between the sites and measure the impact of centralization on the regional kinship difference the social network analysis along with the traditional grave wealth indices are used.

The dataset for the study consists of funerary assemblages that contributed to the organization of the burial space, with the body of the deceased as its literal and metaphorical center.

Grounded in decades of field research, this study suggests a relatively small-scale perspective on the Scythian burial rite before its eventual downfall.

10 DYNAMICS OF INEQUALITY, PAST AND PRESENT: HOUSING IN ROMAN BRITAIN AND THE CONTEMPORARY UNITED STATES

Abstract author(s): Ortman, Scott (University of Colorado)

Abstract format: Oral

There is a rich and growing literature that uses the archaeological record of housing to investigate the emergence and consequences of inequality in past societies. Two issues that have not been addressed thus far are: 1) the degree to which variation in housing mirrors patterns of inequality in asset values and incomes in present-day societies, and 2) whether notions of trade-offs between inequality and growth in contemporary economics reflect general dynamics that characterized pre-capitalist societies as well. In this paper I address both issues. I first examine relationships be-

tween house areas, house values, and household incomes in the contemporary US using real estate and census data. Then, I examine a database of housing information for Roman Britain to examine the relationship between inequality and development over time. Results show: 1) that inequality is a system-level property that can be estimated using data from a simple random sample of settlements; 2) that house areas generally under-represent levels of inequality based on asset values and incomes; and 3) that increasing inequality in Roman Britain was associated with substantial improvement in the material conditions of life for most households. Together, these results suggest archaeological data can in fact capture the dynamics of inequality in ways that are potentially helpful for the present and future.

11 SOCIAL NETWORKS, INEQUALITY, AND THE HOUSING STOCK OF POMPEII

Abstract author(s): Hanson, John (University of Oxford)

Abstract format: Oral

Over the last few years, there has been significant interest in using the architectural characteristics of domestic structures, such as the total footprints, the numbers and diversities of rooms, and the interior decoration of residential units within Pompeii and Herculaneum as a proxy for social and economic inequality, revealing a much larger group of middling consumers than has usually been acknowledged. One of the problems with this approach, however, is that it has tended to ignore the wider social networks of the inhabitants of these structures. In this talk, I will use a combination of recent theoretical work on urban systems and existing empirical data to re-evaluate the evidence for the housing stock of Pompeii. This reveals previously unrecognized patterns, which not only raise interesting questions about the interrelationship between social networks, systems of patronage, and domestic architecture, but also complicate the latter's use as a proxy for living standards and inequality.

12 THE LIFESTYLE OF THE MEDIEVAL NOBILITY FROM 800 TO 1500 IN EASTERN SWITZERLAND

Abstract author(s): Hutter, Iris (Amt für Archäologie Thurgau; University of Zurich)

Abstract format: Oral

The standards we use today to measure comfortable living or housing are most likely not the ones that medieval society used. It is difficult to guess what is appropriate to one's social rank in a certain time period, because we tend to judge categories such as comfort, defensive use, representation or remarkable construction solutions by different standards than contemporary witnesses. In addition, the indicators for wealth or nobility in society varied regionally.

To find out more about the needs and associated standards of living of nobility in specific periods, an analysis of three castles was conducted: Altenburg, Castle Klingen and Castle Altenklingen (Switzerland). They stand or stood in short distance of each other and, as the research revealed, were built in successive periods during the Middle Ages. An old castle was abandoned in order to live in a newer or to build the newer castle.

This base offers a good ground to evaluate standards for nobility, in best-case measure wealth of the owner of each castle in a similar setting but different time. The results indicate that nobility showed their wealth and power in many different ways throughout time. Even though the requirement to have a residence befitting one's rank remains the same and the period under investigation is relatively narrow, the changes in the understanding of comfortable living and representation are remarkable. Some symbols of nobility developed early on out of need (like the tower of a castle) were reproduced as the standard for a castle for many hundred years, even if their actual purpose of use was completely lost. Many more results of the research show that wealth and nobility showed themselves in many more facets and make it clear that individuals but also communities of a larger region, valued and understood same or similar symbols as wealth.

13 ARCHITECTURAL INEQUALITIES - SPATIAL DISTRIBUTION OF WEALTH IN PREINDUSTRIAL CITIES IN CENTRAL EUROPE

Abstract author(s): Legut-Pintal, Maria (University of Wrocław) - Grosel, Mikołaj (Faculty of Architecture - Wrocław University of Technology)

Abstract format: Oral

In Central Europe traditional studies of urban architecture were focusing on artistic quality and functional changes of the house layout. Synthesis are usually limited to the most interesting buildings. Very rarely it is possible to characterise urban housing as a whole phenomenon. Most studies about inequality in pre-industrial society are based on written sources - mainly tax records. We would like to discuss some limitations of methods of evaluating inequalities, such as the Gini coefficient based on tax records and analysis of living space area in the case of preindustrial cities in Central Europe.

In our studies we test a model of wealth distributions based on analysis of houses based on written, architectural and archaeological sources and iconography. We developed a method of evaluating the city's residential space, in which location (quality of neighbourhood), architectural quality of the building (elements of art, building material, structural

complexity) and access to the facilities were identified as the main factors of the utility value of the real estate. We verify the accuracy of the proposed model against tax records. The result suggests that it is possible to simulate distribution of wealth in the cityscape based on other indicators. Taking a problem of comparing wealth distribution in different towns, we assume that the scale of inequality may depend on the size of the city. The ways in which luxury is spread is correlated with urban morphology and cultural and political context.

14 TRACING INEQUALITIES THROUGH MATERIAL CULTURE. POST-MEDIEVAL AND CONTEMPORARY ARCHAEOLOGY FROM "SCATTERED FINDS" TO "TOTAL CONTEXT"

Abstract author(s): Sawicki, Jakub (Institute of Archaeology of the Czech Academy of Sciences in Prague)

Abstract format: Oral

The subject of social inequality is very closely related to issues such as quality of life, material wealth or differences between the "standard" and "luxury" of archaeologically recorded material culture. The terms mentioned are of course not the same and cannot be used interchangeably, but they have many points in common and the research questions which can address them are also quite similar.

The experience provided by the archaeology of large urban centres, rich in complex contexts dating back to the Middle Ages, and the abundance of historical sources, sometimes difficult to correlate, shows the need for developing new methods in understanding and dealing with material culture from a very dynamic environment.

This paper aims to discuss some observations concerning the possibilities of analysing large assemblages of material culture to study the changes and complexities of social relations regarding luxury, standard and poverty leading to further understanding of the quality of life as well as tracing the inequalities. It focuses on two case studies. The first one concerns the interpretation of "scattered finds" from urban excavations of medieval and early modern Prague (Czech Republic) and Wroclaw (Poland), large urban centres of historical significance. The second is a test of these concepts which aims to analyse the material culture acquired during surveys at the contemporary, "living" flea market while the entire "total" context of those items is theoretically known.

15 INEQUALITY WHERE, MARGINALITY WHERE. METHODOLOGICAL REFLECTIONS ON CONCEPTS AND SOCIAL RELATIONSHIPS FROM THE MEDITERRANEAN MOUNTAIN (17TH-21ST C.)

Abstract author(s): Stagno, Anna Maria - Tacca, Matteo (University of Genova - Laboratory of Environmental Archaeology and History) - Di Tullio, Matteo (University of Pavia) - Bizzarri, Giulia (University of Genova - Laboratory of Environmental Archaeology and History)

Abstract format: Oral

In 1972, with his "Stone age economics", with the idea of "original affluent society" Marshall Sahlins allowed to develop a first complex discussion around the meaning of complexity, inequality and wealth. What after more than 50 years still remains effective is the possibility to avoid deterministic and mechanistic explanation, when considering that each one (as many others) of these concepts needs to be contextualised to be used and, thus, to become helpful in our historical enquiries. While this statement seems quite obvious, less obvious could become in the dialogue between disciplines and analytical perspective. Inequality is not a concept univocal, but depends from the comparison we make and the relationship we explore in our investigation, and depends also by the different documentary series we take into account.

By comparing investigation carried out in the mountains of southern Europe which made it possible to analyse, with a micro-analytical perspective, the transformations of different rural hamlets between the 17th and 21st centuries, this paper aims to reflect on some possible key issues. Inequality as a concept becomes intelligible when social groups and collectivities are considered in relation to each other, so which are the relationship and the distance we take in account? If objects create social relationships, and there are no relationships without objects, the different uses of objects is enough to explore the complexity of the "inequality"?

16 EXPLAINING VARIABILITY IN WEALTH INEQUALITY: REFLECTIONS FROM THE GLOBAL DYNAMICS OF WEALTH INEQUALITY (GINI) PROJECT

Abstract author(s): Kohler, Tim (Department of Anthropology, Washington State University; Santa Fe Institute; Crow Canyon Archaeological Center; Department of Archaeology, Durham University) - Bogaard, Amy (School of Archaeology, University of Oxford; Santa Fe Institute)

Abstract format: Oral

One of the methods for assessing the causes of change in any particular cultural-historical sequence is to see if the factors purporting to drive change in one sequence are equally potent in other sequences where their contexts (the other salient variables) may be quite different. Such cross-cultural approaches were quite common in the mid-twen-

tieth century, though applied more typically to ethnographically known societies than to the long-term sequences of change available to archaeology. Here we apply this logic to understanding the causes for variability in rates of change in wealth inequality through time using Gini coefficients calculated across size distributions of contemporaneous houses from a dozen world regions as our main measure of inequality. These data have been assembled by the members and partners in the GINI (Global Dynamics of INequality) project, sponsored by the Coalition for Archaeological Synthesis, managed through the Center for Collaborative Synthesis, and funded by the US NSF.

185 THE AGENCY OF VALUE IN ARCHAEOLOGICAL HERITAGE

Session theme: 3. Heritage Narratives and Representations

Session organisers: Barreiro, David (Institute of Heritage Sciences - Spanish National Research Council) - Díaz de Liaño, Guillermo (MOLA - Museum of London Archaeology) - Pastor Pérez, Ana (Norwegian Institute for Cultural Heritage Research - NIKU; University of Barcelona) - Robson, Elizabeth (University of Glasgow) - Watson, Sadie (MOLA - Museum of London Archaeology)

Session format: Regular session

Ideas of value have become key elements in debates within heritage-related disciplines, and particularly archaeology. There is an abundant and diverse literature on how social value, as opposed to supposedly non-social value, can be created, circulated, or challenged. Similarly, there is growing consensus on the need to not only understand how people engage with archaeological heritage, but also to reflect a far greater diversity of experiences and values in place-based policymaking and heritage management processes. These debates have profound consequences for the nature of archaeology in practice (e.g., the development of fields such as public archaeology) and theory (e.g., how we conceptualise archaeological heritage and value, as well as their agency).

This session will explore a diverse range of archaeological projects and the different ways in which they (re)produce and circulate value. We are particularly interested in contexts where different actors are working collaboratively in archaeological heritage-making processes (from planners and those in the construction industry, to policy makers, residents, landowners, and interest groups, to academic and commercial archaeologists, conservators and heritage managers) and how these actors express and negotiate their potentially differing values in practice. Is value itself an actant in these networks, with the capacity to catalyse or direct management processes? Are all values considered equally, and how might analysing discourses on the value of archaeological heritage help move us towards more open, participatory, sustainable, and socially transformative practices?

The aim of this interdisciplinary session is to provide a space for dialogue on how we understand the networks of value created through archaeological heritage-making processes. Papers are invited that explore theoretical, strategic, and/or methodological approaches to the concept of value. Case studies may be drawn from, but are not limited to, community projects, citizen science, community museology, public archaeology, heritage management, research projects, commercial archaeology, and conservation.

ABSTRACTS

1 AGAINST A DISCOURSE BASED ON VALUES. DISPUTES AND ARCHAEOLOGICAL HERITAGE

Abstract author(s): Corpas, Nekbet (Universidad Complutense de Madrid; Instituto de Historia-CSIC)

Abstract format: Oral

Discourses based on the values of archaeological heritage are key to justify legal protection, public spending and management of heritage. Academic works list multiple values of archaeological heritage: historical, scientific, aesthetic, economic, symbolic ... Values may be understood twofold (Mason and Avrami 2000; Avrami and Mason 2019): on the one hand, they are positive qualities attributed to archaeological sites and objects by heritage law, administrations and some agents (traditionally scientific/material/aesthetic); on the other hand, they refer to principles or ideas that help in guiding the actions of people/institutions. Understood as general principles, they open the chance to approach archaeological heritage beyond traditional views, yet, as those authors have observed, they are normally viewed as qualities. An incompatibility of opinions between groups on the value of archaeological heritage is recurrently identified in international documents on cultural heritage as the main cause of disputes in the field. However, a research into the disputes in different cultural landscapes suggests that the discourse on the values of archaeological heritage management frames these conflicts in a way that excludes non-archaeological issues from the debate (e.g. environmental concerns, the economic merit of a proposed project, social attachment to a site or challenges between different governmental departments). A focus on the values of archaeological heritage prevents discussing and addressing the motives of the parties involved in archaeological disputes and may narrow these conflicts to pure technical issues (e.g. how to excavate an archaeological site). Drawing on the research of several cases of collaboration between heritage

authorities and civil society organizations/individuals, the appropriateness of the concept of heritage values is put into question for contexts of archaeological disputes.

2 DISCUSSING THE VALUES OF ARCHAEOLOGICAL HERITAGE WITHIN THE FRAME OF PUBLIC ARCHAEOLOGY

Abstract author(s): Pastor Pérez, Ana (Norwegian Institute for Cultural Heritage Research - NIKU; Institute of Archaeology, University of Barcelona - IAUB; Universitat Autònoma de Barcelona - UAB) - Frascella, Selene (Universitat de Barcelona - UB; Institute of Archaeology, University of Barcelona - IAUB)

Abstract format: Oral

This paper aims to discuss how heritage values linked to archaeological practice, and more specifically to a more public or community-based approach, are conceptualised and used in decision-making strategies. These values have mutated and evolved along with the ontological shifts that archaeology has gone through, moving from monolithic, elitist, and positivist categories to others that are more dynamic, social, and interpretative. In this sense, archaeology has become an active agent that collaborates to respond to current societal challenges and social sustainability. This is especially visible in public and community archaeology projects.

In this paper, we will relate these thoughts to two case studies, one urban and one rural: the Fabra i Coats Recint (Barcelona) and the Cardboard Hospital of Capdella (Lleida). Two non-archaeological sites related to industrial heritage that have been analysed through participatory archaeological ethnography. This results in the emergence of a series of multi-temporal values that confer on the same place or object multiple meanings and significance. The otherness connected with these new inclusive heritage values developed through participatory strategies, which represent peripheral discourses through multivocal narratives, will inspire new connections with present-day voices, disrupting the hegemonic paradigm of traditional values. The risk, as always, is that we do not revert to the authoritarian nature of our expert vision, thereby breaking the chain of agency at its source.

Therefore, the goal of this research is, on the one hand, to talk about how ideas about archaeological value and heritage have changed over time and what those changes mean for community archaeology. On the other hand, it pretends to look at what strategies we are using to improve a grassroots social value in which all community voices will be heard in decision-making.

3 BEYOND THE HERITAGE VALUE CHAIN

Abstract author(s): Barreiro, David (Incipit - Institute of Heritage Sciences)

Abstract format: Oral

The value-chain model has long guided the research, management and dissemination processes of cultural heritage, both explicitly and implicitly. This model was defined in Spain during the mid-1990s, when heritage became a significant element for a sector of post-processual archaeology.

The original value chain model proposed combining the production of knowledge and its transfer to the environment, in the form of heritage, thus expressing a one-way concept. It contained different evaluative instances regarding heritage entities: their informative value, their heritage value and their social value. In such a way, it was adjusted to the means of knowledge production and innovation of those days.

Over the last thirty years, the emergence of a new heritage paradigm, oriented towards participation and social value, has led, on the one hand, to the generation of new heritage realities. On the other hand, this new paradigm is in line with the emergence of citizen science and community archaeology and the involvement of social agents in processes of knowledge production.

Furthermore, research continues to generate different axiological models, all of which point towards a complexification of the value systems which come into play in heritage activations. In addition, the growing need to integrate heritage management with landscape management as a biocultural environment generates even more complex axiological models.

These changes imply the necessity to update the value chain model in the ontological, epistemological and axiological planes. In this presentation, we shall seek to exemplify this process by way of a case study situated in Uruguay.

4 EXPLORING A LINK BETWEEN LOCAL AND ARCHAEOLOGICAL VALUES: A CASE STUDY FROM OLD DONGOLA, SUDAN

Abstract author(s): Fushiya, Tomomi (University of Warsaw)

Abstract format: Oral

Social values are often discussed as opposed to other non-social values such as archaeological value(s). Placing these two as opposition may risk missing an opportunity to explore relations between different values, or a possibility of in-

teraction between them in a heritage-making process. Efforts in participatory archaeological heritage projects at Old Dongola, Sudan, has developed a path way to explore how different values of an archaeological site could be brought together and gradually shift the narrative of a place.

Old Dongola archaeological site has been known as the capital of the Medieval Nubian kingdom, Makuria. Archaeological investigations at the site in the past fifty years have largely dedicated to the Medieval period (6th to 14th century CE), especially Christian remains (e.g. churches, monasteries). Yet, the history of the site goes further into the post-Medieval Islamic period and continues on up to today. Local communities who are all Muslims are direct descendent of the former residents of Tungul (Old Dongola) and the cemetery is still in use as a burial ground and a place of ceremony. Nevertheless, these links between the past and present, archaeology and communities, did not draw scholarly attentions and unexplored for a long time. Archaeology and communities were separated in the narrative-production and the knowledges of each other until recently.

Two new research projects; one focused on archaeological investigation of the Islamic period and the other carried out community engagement and ethnographic studies that were instigated in 2018 and 2019, brought more conversation opportunities about the lands, ancestry, archaeology and heritage between archaeologists and local communities. This paper discusses the ongoing collaborative heritage-making process with focuses on what has been learnt so far, and what changes and challenges it brought to the values of the place and human relationships.

5 LEVELS OF SIGNIFICANCE: PROMOTING VALUE AT THE PREHISTORIC TELL OF VÉSZTŐ-MÁGOR

Abstract author(s): Seifert, Jerrod (Cardiff University) - Lingle, Ashley (University of York) - Gyucha, Attila (University of Georgia) - Duffy, Paul (Kiel University) - Parkinson, William (Field Museum; University of Illinois - Chicago)

Abstract format: Oral

Values shift over time. To be sustainable, values need to be adaptable, which creates a challenging paradox for site managers who need to preserve the past, serve the present, and safeguard for the future. The team working to re-invigorate the archaeological site of Vésztő-Mágor, Hungary, is attempting to recognise the benefit of blending interdisciplinary perceptions of value in their approach of safeguarding the site. This multi-year program aims to stabilize, preserve, and rejuvenate the exhibition of a unique, in situ trench excavated into the largest tell on the Great Hungarian Plain. Drawing insight from archaeologists, conservators, engineers, site managers, and working with the local community, the project looks to create a dialogue of meaningful presentation strategies for the site. Project phases include conservation and stabilization throughout the trench and the built shelter, climate control with environmental monitoring, and finally a visitor interpretation program to rejuvenate the exhibition. The key aim of the project is to help ensure the site is preserved as a thriving center for local identity and regional congregation. The team looks to achieve this through collaborative approaches to enhancing visitor experience and attracting more visitors. This paper discusses the successes and challenges of the initial foundations of the project and stabilization program. While it is recognised that despite having different and often conflicting purposes, archaeological research and conservation are deeply intermingled in the preservation of future knowledge, and this project looks to take a further step in inclusive practice through understanding value in a broader perspective. In this context, focus on communal and evidential values in initial project phases is used to support later stages of engagement focusing on evidential and historical values of this incredible piece of heritage.

6 RETHINKING THE ROLE OF SOCIAL VALUE IN HERITAGE CONSERVATION: PERSPECTIVES FROM CHINA

Abstract author(s): Gao, Qian (Durham University)

Abstract format: Oral

This paper addresses the lack of understanding of the interaction between social value and conservation interventions. Value-based approaches, primarily promoted by nation-states in the global north, have become an internationally accepted heritage conservation paradigm. The recognition and growing emphasis on social value have been a major development of the paradigm over the last three decades. Social value refers to the associations and meanings that a place of heritage holds for a specific community. Through the 2015 revision of the China Principles, China is one of the global south nation-states that has recently embraced 'social value' in its heritage conservation practices.

Although social value is given equal weight in heritage conservation to the 'three major values (historic, scientific, and aesthetic)', we know surprisingly little about the relationship between social value and the agents that physically interfere with heritage objects. The core premise is that the material constituting a heritage object, as well as the transformations it undergoes over time, is essential to the social values associated with the object. Material durability, ageing signs, and the resulting patina all contribute to the perceived qualities that underpin social values. Changes in

the physical sphere can thus alter people's understanding and experience of the object, enhancing or diminishing the meanings that they project onto it.

Using the Dazu rock carvings, a UNESCO World Heritage site managed as a museum in southwest China, as a case study, this paper aims to understand how conservation practices have influenced, and been influenced by, the social values attributed to heritage objects and sites. It focuses on the recent renovation of Dazu's 800-year-old thousand-hand bodhisattva rock statue, a national project that has sparked controversy due to the conservation methods used to preserve its social values.

7 AN ETHNOGRAPHIC VIEW ON HOW 'VALUE(S)' ARE CONCEPTUALISED, PRODUCED AND CHALLENGED IN DEVELOPER-LED ARCHAEOLOGY

Abstract author(s): Díaz de Liaño, Guillermo (MOLA (Museum of London Archaeology))

Abstract format: Oral

This talk will explore, from an ethnographic perspective, the production and conceptualisation of 'value(s)' in the context of developer-led commercial archaeology in the United Kingdom.

It will analyse the different ways in which value is produced within the network of relationships, stakeholders and processes that constitutes developer-led archaeology. It will also reflect, from the situated perspective of archaeology, on how we can navigate, influence and challenge those networks to produce 'better value(s)', or value(s) that align with our goals.

Among the key elements contributing to this networks of 'value(s)', some of the central ones that will be analysed in this talk are 1) the structural conditions of the networks, paying particular attention to the agency of the stakeholders involved, and 2) the communicative process between the stakeholders, which includes not only the interactions between archaeologists and developers, but also the interactions within each discipline during the different stages of the process, and the channels and styles of communication.

8 ANTI-SOCIAL BEHAVIOURS: THE STRUGGLE TO CREATE SOCIAL VALUE THROUGH DEVELOPMENT-LED ARCHAEOLOGY

Abstract author(s): Watson, Sadie (MOLA)

Abstract format: Oral

The development-led, or preventive, system of archaeology is the structural enabler of archaeological work across Europe and beyond. We have often discussed the problems inherent with taking economic value as a primary focus for decision making, and how the onus on cost-driven work can reduce the capacity for research and public participation. Recent advances in policy and practice are helping to steer some projects away from this as the main consideration, but it persists, and realistically we observe movement away from the lowest price being chosen only at glacial pace. The primary aim of many archaeological contractors still appears to be satisfying commercial customers, so how can we square that with the need to embed sustainability for communities or encouraging the inclusion of social value into project design and implementation. This paper will take a critical look at some examples from the UK, consider whether the social value argument is too radical for the sectors that we work within, provide a theoretical underpinning for the addition of values into the process, and suggest how we could enforce our beliefs in social value in situations where the opposite (antisocial value) is being produced.

9 SHARING THE KNOWLEDGE TO PROMOTE THE VALUE OF UNLISTED ARCHAEOLOGICAL HERITAGE IN ESTONIA

Abstract author(s): Kaldre, Helena - Lillak, Anu (Estonian National Heritage Board)

Abstract format: Oral

In recent years, several successful cooperation projects have been initiated by the Estonian National Heritage Board to acknowledge and consider the value of unlisted archaeological heritage. This paper aims to explore the relationships among different local and national management bodies and their joint work in the protection of different archaeological sites and how the exchange of information shapes new values about archaeological heritage.

In the process of renewing the comprehensive plans by the local municipalities, the collaboration with the National Heritage Board has resulted in the latter to giving information and input about the archaeologically sensitive areas where sites are not listed but known. The municipalities are encouraged to take these areas into account in spatial development projects, although they are not legally obliged to do so. Although there has been some resistance from the municipalities, more and more of them have started using the information to enhance the planning process and to know better when archaeologists should be involved.

Cooperation between the National Heritage Board and Transport Administration is a good example of successful intergovernmental information exchange. Due to several unexpected archaeological discoveries during road construction projects, the Transport Administration has decided to include an archaeological survey in the planning process for major motorways. The goal is to be able to minimise “archaeological surprises”, but also to plan the construction process with archaeologists for a smoother journey.

These examples demonstrate that the value of archaeological heritage and its recognition are heavily reliant on information sharing. The information about unlisted heritage sites is not made public in Estonia because of the potential threat of looting. However, in the situation where legal protection of the sites is a slow process, the choice to strategically share some of the information can be an effective measure of protection.

10 TANGIBLE PUBLIC BENEFITS OF DEVELOPMENT-LED ARCHAEOLOGY: A FRAMEWORK FOR COLLABORATION?

Abstract author(s): Sloane, Barney (HE - Historic England)

Abstract format: Oral

The relationship between public value and public benefits of archaeology is significant when considering the management of our archaeological resource. One way of looking at this relationship is that tangible benefits of archaeology combine to create the value which society recognises, and thus continues to support through its legislation and policies. The European Archaeological Council (the organisation of state archaeological heritage managers in Europe) are developing a basis for promoting a wide range of public benefits which development-led archaeology can bring. Some are well-known – creating knowledge of the past, recovering cultural treasures for display and research. Others are less well developed (the contribution archaeology makes to other scientific disciplines). This paper will outline these benefits, and set out why EAC believes realising them helps to demonstrate that archaeology should not be seen as a costly burden but as a net gain for the state in which it operates. It will underscore the importance of clear recognition of the value derived from these benefits by decision-makers, developers/investors, archaeologists and the wider public. We hope this will sustain Valletta principles and maintain strategic support for development-led archaeology, avoiding legislative and policy shifts which could have unintended, significant consequences. It will also offer and invite some general thoughts about how to embed their consideration into early planning for excavations.

11 BEYOND ‘HARVESTING’: UNDERSTANDING BIAS IN SOCIAL MEDIA RESEARCH ABOUT HERITAGE VALUES

Abstract author(s): Bonacchi, Chiara (University of Edinburgh)

Abstract format: Oral

This paper discusses differences and bias in assessments of heritage values that are based on social media research. In the last few years, there has been increasing consideration of social media websites as fields where interactions with the past can occur and be examined, qualitatively or in automated ways. Existing literature has analysed cultural, social and political values associated with tangible and intangible dimensions of the past on sites ranging from Twitter, Flickr, Facebook, and Instagram to eBay and YouTube. However, there has not been, so far, a focused and empirically evidenced reflection on how heritage values relating to the same heritage ‘thing’ emerge from different social media environments. Such a study is of essential importance to account more effectively for the variabilities and injustice that can derive from research approaches that a-critically analyse heritage values by harvesting data from specific social media sites. This important issue will be addressed by reflecting on the multi-platform social media research undertaken on the social values associated with a specific heritage place, the area once occupied by the Old Gas Works in North Canongate, in the city centre of Edinburgh, UK. The study was conducted as part of the Deep Cities project (2020-22), which aimed to develop value-based methodologies to guide the curation of urban heritage transformations across Europe. Examining how injustice is embedded in knowledge production about heritage is of particular importance when it informs decisions on themes of public interest such as conservation and urban planning.

12 VALUED AND VALUES: AN EXPERIMENTAL RE-EXAMINATION OF LOCAL TRANSFORMATIONAL HERITAGE DATASETS

Abstract author(s): Boardman, Claire (University of York)

Abstract format: Oral

Between 2018 and 2020 designed ethnographic interventions (Mounajjed & Walker, 2007) were completed in two inner-urban neighbourhoods; areas characterised by the repetitive utilitarian architecture of late 19th century/early 20th century worker housing and diverse, often highly mobile populations and other place based stakeholders.

Encompassing multiple communities and phases of local, transformational heritage engagement, several local participant events ran over a 9 month period followed by an additional 6 months of remote monitoring to evaluate longer term impact and legacies. These longitudinal studies generated a large amount of qualitative data in multiple output formats including: hand-drawn cognitive maps, heritage-led digital stories and workshop and interview transcripts.

This paper presents an initial, experimental step in a re-examining of this existing rich and comparative data resource through a 'value lens'. Through the application of the 'Pen Portrait' analytical technique (Sheard & Marsh, 2019) to create a chronological view of individual participant interactions before applying a close reading narrative analysis to ask the core question: what elements are valued here and what values are being invoked? and further, how/if these differ between stakeholder groups and/or change over time.

Key findings and insights from both the data analysis and the overall approach will be discussed along with potential avenues for future research including its application at scale and intelligent machine support.

13 THE CONTEMPORARY VALUES OF LANDSCAPES OF DIFFICULT HERITAGE: THE CASE STUDY OF THE SITE OF NATIONAL REMEMBRANCE IN ŁAMBINOWICE, POLAND

Abstract author(s): Pawleta, Michał (Adam Mickiewicz University in Poznań) - Kobiąłka, Dawid (University of Łódź)

Abstract format: Oral

Since June 2022, the Central Museum of Prisoners-of-War (Poland) has been carrying out a multidisciplinary research project entitled Science for the Society, Society for the Science at the National Memorial in Łambinowice (former Lamsdorf). From the second half of the ninetieth century, various types of PoW, displacement and forced labor camps functioned in the village of Lamsdorf and on its outskirts. The applied methodology combines historical, archaeological and ethnographic methods to map material remains of the camps that have preserved until the present as well as their contemporary values for the local communities.

The archaeological fieldwork has also important social, cultural and community-oriented aspects. It has been carried out in accordance with the tenets of community archaeology and consequently assumed an active engagement of local communities in archaeological works and activities undertaken around heritage of Lamsdorf's camps. A pivotal element assumes interviews with local people and various heritage stakeholders to assess the ways of how they perceive archaeological fieldwork and how it connects to their traditional ideas about the discipline and determines their attitudes and values toward heritage and the painful past.

The aim of our presentation is to discuss the preliminary results of the ethnographic research conducted during the project so far. We focus on two aspects: (1) recognition of the contemporary significance and values of post-camp sites in Łambinowice for local communities, and (2) examination of the attitudes and values of volunteers participating in archaeological research conducted at post-camp sites toward heritage and archaeology. The undertaken research enabled to identify contemporary social values of heritage – the relics of the camps. Additionally, they prove the value of so-called community archaeology in which the participation of local communities in field research is an important element of applied methodology.

14 DIVERSE VALUES AND MULTIPLE NARRATIVES: ASSESSING AND WRITING THE CONTEMPORARY SIGNIFICANCE OF THE CATERTHUNS HILLFORTS IN ANGUS, SCOTLAND

Abstract author(s): Robson, Elizabeth (University of Glasgow)

Abstract format: Oral

Archaeological heritage can bring a unique understanding and character to a place. However, studies have shown that the social values associated with such places (how they contribute to people's sense of identity, belonging, attachment, and memories) can differ significantly from assessments of scientific and historical value. Indeed, contemporary narratives and practices, including those that respond directly to the presence of archaeological remains, may diverge from, or even conflict with, professional understandings and conservation priorities. How can heritage management practices identify and respond to these diverse values and multiple narratives? And what role do values themselves play, actively or unconsciously, in these discourses?

This paper examines the role of values in assessing and writing about the contemporary significance of the Brown and White Caterthuns. The Caterthuns are a pair of Iron Age hillforts (located about 1 km apart) in Angus, Scotland. The forts, which are visible as earthworks and collapsed stone walls, were designated as nationally significant monuments in the 1880s. The hills are popular destinations, used by locals and visitors to the area. In recent years, site managers have expressed concern that some visitor activities are damaging the archaeological remains and jeopardising the scientific value of the site.

Drawing on the experiences of conducting a social values assessment for the Caterthuns, and the subsequent incorporation of the findings into the site's Statement of Significance, the paper shows how different values are mobilised – shaping who participates, how, and which knowledges are amplified (or elided) in discussions on archaeological

heritage. It argues that greater reflexivity and recognition of situated expertise is needed to surface these processes and contextualise the multiple values that are active within heritage management.

15 WE CREATE HISTORY - ARCHAEOLOGY IN KINDERGARTEN AS A STRATEGIC TOOL IN SETTLEMENT STRATEGY AND CULTURAL HERITAGE POLICY MAKING

Abstract author(s): Paulsen, Charlotte - Mørk, Stine (Museum Skanderborg)

Abstract format: Oral

Museum Skanderborg is a cultural history museum with an archaeological service that covers the heritage of Skanderborg municipality from stone age to modern times. Museum learning is a primary aim of the museum's public obligation. In cooperation with kindergarten institutions from the municipality of Skanderborg, Museum Skanderborg has developed a learning program, "We create history" for children aged 4-5 years. The aim is to use history and archaeological artefacts to support and develop shared identity of the children and the adults in the kindergartens. The municipality of Skanderborg is a newcomer's settlement area, with new citizens with no historical connection to the location, where they are going to live.

The course includes six themes: Stone Age, Bronze Age, Iron Age/Viking Age, Middle Age, My Town and My Kindergarten. The journey through time supports their affiliation to their local area – what happened before me? The program has now been running for six years. App. 20 kindergarten institutions are participating yearly, each with groups of up to 25 children.

The children pass on their newfound historical knowledge to their families - thus, creating a shared identity that helps them all to grow attached to their new neighborhood.

Attending the program is now a strategic goal in the development contracts, between the kindergartens and the municipality. On governance and political level, the learning program is part of the revision of the cultural heritage policy by the city council.

This paper will present the political as well as pedagogic motives that lies behind developing the project and what values it has created for the institutions, the children and their families, the museum and for the policy makers. It will also show examples of the activities and interactions with the children and their immediate and often funny responses to the subjects.

16 DEVELOPING A NEW RUBBISH THEORY AT THE MUSEUM OF TAT

Abstract author(s): Fredheim, Harald (University of York)

Abstract format: Oral

In his book *Rubbish Theory*, Michael Thompson argues that the value of objects in use is 'transitory' and that after falling out of use and becoming 'rubbish' they may subsequently acquire 'durable' value as heritage objects. This fits well with how we often conceptualise value as archaeologists. However, more recent research on the transitory and subjective/situated values of heritage calls Thompson's value categories and their relationships into question. This presentation draws on the findings of the Profusion theme of the Heritage Futures research programme (heritage-futures.org) to show that the values of everyday objects in social history collections cannot be considered 'durable' and may in some cases once again be becoming rubbish. This raises questions about the sustainability of heritage value and how we might more accurately and creatively understand and manage heritage.

As a response to these reflections, this presentation will also outline a pilot project for establishing a Museum of TAT that specialises in transforming unwanted museum objects through collaborations with creative practitioners, sometimes referred to as practices of 'creative disposal'. It will consider whether such material transformations can be considered acts of conservation - and how the values of the original objects and new artworks are valued differently by museum staff, artists, visitors and other stakeholders.

17 AWAKENING THE SLEEPING BEAUTY! THE ROLE OF ARCHAEOLOGY AND CULTURAL HERITAGE IN THE REVIVAL OF BADEN'S THERMAL BATHS

Abstract author(s): Schaer, Andrea (Archaeokontor GmbH/University of Berne)

Abstract format: Oral

Baden in the Swiss canton of Aargau looks back on 2000 years of tradition as a thermal spa. The Romans were the first to use the local sulphur springs. In the Middle Ages and until the 17th century, Baden was the most important spa resort in German-speaking Europe. During the spa boom of the 19th and early 20th centuries, Baden was an internationally important spa town, but always in the shadow of even more famous spa towns such as Baden-Baden or Vichy. In the 20th century Baden turned into an industrial town and lost its identity as a spa town.

In the first two decades of the 21st century, the revitalisation of the baths was undertaken.

Preceding and accompanying the building projects extensive archaeological excavations were carried out in several stages between 2009 and 2022. This not only yielded a wealth of scientific findings on the history of the Baden baths. Rather, the visible excavations made the rich cultural heritage of the Baden baths manifest again and most of all made it a public issue.

The presence of the rich tangible and intangible cultural heritage, as well as the connections between the past and the future that were shown, laid the foundation for a reawakening of an increased awareness of the baths' history, and the cultural heritage was newly understood as – besides of the healing waters – the USP and main asset for the city and the baths.

The paper shows the understanding of the value of cultural heritage of the spa town has changed due to the archaeological work. It further presents some of the initiatives and valorisation projects that base on or include archaeological heritage. Finally it also points out where it has not been possible to sustainably use the cultural heritage to shape the future.

A. TRACES OF ANTIQUITY IN THE COLLECTIONS OF STATE CASTLES AND CHATEAUX IN THE CZECH REPUBLIC

Abstract author(s): Kucova, Stanislava (National Heritage Institute, Czech Republic)

Abstract format: Poster

Classical archaeology has its place even in countries that were only marginally involved in the ancient world. Since the time of Emperor Rudolph II, aristocracy, nobles, and various collectors in the Czech lands have been inspired by classical antiquity and have collected and often displayed ancient artefacts in their residences. Due to dramatic political changes, the ownership of these imports changed, and even today we can still encounter often fragmentary collections (apart from museums and universities) in publicly accessible castles and chateaux throughout the Czech Republic on touring circuits or in depositories; 106 of these objects are currently state-owned and are under the administration of the National Heritage Institute. The poster will summarize the issue of ancient collections in state castles and chateaux today and will present the most interesting pieces and their finding circumstances, placing them in the context of the ancient world. Attention will be paid in particular to the collection of Chancellor K. W. N. L. Metternich at Kynžvart Castle in western Bohemia and the question of what value a collection of archaeological artefacts that is only fragmentary and that fulfils a different purpose than at the time of its creation can have and what contribution such a collection can make to contemporary classical archaeology.

195 FAR AWAY, SO CLOSE - THE CURRENT DEBATES ABOUT POST-MEDIEVAL CEMETERIES IN ANTHROPOLOGICAL AND ARCHAEOLOGICAL STUDIES

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Líbor, Csilla (Hungarian National Museum; Eötvös Loránd University) - Mateovics-László, Orsolya (Hungarian National Museum) - Piombino-Mascali, Dario (Institute of Biomedical Sciences, Vilnius University) - Lepionka, Hubert (Podlaskie Museum in Białystok)

Session format: Regular session

The archaeology of death and the bioarchaeological analysis of cemeteries have now undergone significant developments and account for a large proportion of research. The growing number of rescue excavations resulted in significant human remains covering all periods, including late medieval and early modern times which were not the main focus of the archaeological studies. The recovery, analysis, and different storage standards and ethical issues emerging with the study of these materials make them undoubtedly special in the field.

The research of cemeteries of the post-medieval/early modern period has no less information for us than the burials from earlier times. Bioarchaeological Research of these human remains and their archaeological contexts enriches our knowledge in the same way: we can learn about the social structure, burial customs, migrations, population changes, disease, and health. But opposite to earlier periods, bioarchaeological data often can be testified by a written source about the individual or a community, or even by documented larger historical events. For example, in the case of the study of epidemic periods, the cemeteries of the past 500 years can provide the best opportunity to examine these distressing environmental impacts on human populations in the past. Also, these populations genetically are the most closely related to modern people which is not only important from a biological perspective but also raises important Ethical questions especially if relatives of the buried are still alive.

This session represents a developing but very important field of bioarchaeology. This session aims to bring together researchers who share a similar interest in cemeteries of the post-medieval/early modern period.

Expected papers may include but are not limited to:

- Presentation of excavations and findings.

- Bioarchaeological analysis of the cemeteries
- Paleopathological analysis of the individuals
- Ethical questions

ABSTRACTS

1 IMAGING THE RADZIWIŁŁ FAMILY (KÉDAINIAI, LITHUANIA): RADIOLOGICAL APPROACHES IN CRYPT ARCHAEOLOGY

Abstract author(s): Piombino-Mascoli, Dario - Jankauskas, Rimantas (Faculty of Medicine, Vilnius University) - Kozakaitė, Justina (Faculty of History, Vilnius University) - Tamošiūnas, Algirdas - Girčius, Rokas (Vilnius University Hospital Santaros Clinics)

Abstract format: Oral

The nine individuals discussed in this paper were recovered during a project aimed at investigating the mortal remains of members of the Radziwiłł family, a powerful dynasty of the former Grand Duchy of Lithuania and the Crown of the Kingdom of Poland, who died between 1666 and 1674. The remains had been contained in a crypt of the evangelical reformed church of Kėdainiai, a historic town in central Lithuania. An additional crypt of the same church was utilized as a resting place for other dignitaries unrelated to the family. Both rooms have been opened, resulting in disturbance and possible mixing of their contents over time, and loss of the identities of the deceased. Therefore, in July of 2019, members of the Kėdainiai Regional Museum and the Faculty of History of Vilnius University, began a project aimed at recovering the remains from both crypts, identifying the subjects as far as possible, and eventually providing them with new coffins to be located within the same burial place. Through this, the research group in charge have recovered a number of mummies and skeletons that were brought to the Faculty of Medicine of the same institution for a thorough bioarchaeological assessment. Out of the 37 individuals investigated, nine were submitted to computed tomographic (CT) analysis due to their remarkable preservation status. This presentation aims to present the results of these investigations, including age, sex, and other identifying features of the individuals, and interpretation of the pathological changes seen on the bone and soft tissues during radiological evaluation.

2 PERSONS BEHIND THE BONES – BIOARCHAEOLOGICAL RESULTS OF AN EARLY MODERN CEMETERY (SZÉCSÉNY, HUNGARY)

Abstract author(s): Líbor, Csilla (Hungarian National Museum; Eötvös Loránd University) - Balogh Bodor, Tekla - Szénásy-Laczkó, Virág - Mateovics-László Orsolya, Orsolya (Hungarian National Museum)

Abstract format: Oral

In 2019, we had the opportunity to excavate a late medieval- early modern cemetery (17-18. c) in Szécsény, Hungary. The excavation area has covered the middle and northeast segments of the cemetery. The cemetery is rich in finds and artifacts, including remains of contemporary clothing, representing a typical archaeological assemblage for this period. Many of the 298 graves contained coffin remains. Despite their relatively good preservation of them, the bones were poorly preserved. Only in the case of some coffin burials were the skeletons complete and well-preserved, including newborn infants. That has raised the question of whether the wooden coffins, the interior coating of the coffins, the geochemical character of the soil, the urban conditions, or individual factors of the skeletons explain the generally poor preservation of the bones. Despite the overall poor condition of the bones, we were able to do a bioarchaeological investigation.

The skeletal sample showed the presence of infectious diseases, malnutrition, and traumas in the population, reflecting the life and death circumstances that once existed in Szécsény in the 17-18th centuries. The abundance of grave finds has allowed us to examine social, sex, and age differences in this community. This research is part of a more comprehensive project that explores early modern/modern Hungarian populations by applying bioarchaeological methods and tools.

3 WHAT YOUR DIARIES DIDN'T TELL ME... PRELIMINARY DESCRIPTION OF POPULATION HEALTH OF EARLY MODERN CHEŁM

Abstract author(s): Grzegorska, Aleksandra (University of Warsaw)

Abstract format: Oral

Health is an important aspect of everyday life which has an undeniable impact on all parts of life, especially highlighted by many epidemics like the recent Covid-19 pandemic. Osteological research of the human remains found during archeological excavations is an important source of information in regard to this topic. In contrast to written sources, osteological analysis provides information regarding people derived from all the social classes, of different ages and

genders. While analyzing human remains, research emphasis can be put on different aspects of health in the past. However, one of the most important results which may later be used by archeologists and historians is the general description of the level of health of the population.

This presentation aims to share preliminary results of a bioarchaeological study of the population from a cemetery in town Chełm (south-eastern Poland, in Lubelskie voivodeship) dated approximately from the 16th to late 19th century. I will present and discuss data from a random sample of 100 individuals (which is approximately 1/4 of all the burials from the cemetery). The assessment of their level of health will be based on indicators such as stature, linear enamel hypoplasias, porotic hyperostosis and infection diseases. The reconstructed population health will be used to create a more comprehensive description of life in the past.

4 TO STUDY OR DISCARD?: RESEARCH POSSIBILITIES, LIMITATIONS, AND ETHICAL QUESTIONS REGARDING COMMINGLED AND FRAGMENTED HUMAN REMAINS

Abstract author(s): Dec, Olga (Doctoral School of Humanities, Adam Mickiewicz University, Poznań)

Abstract format: Oral

Commingled and fragmentary human skeletal remains are a particular type of osteological material – rather specific and often problematic from the point of view of bioarchaeological and anthropological analyses. They can be retrieved from a variety of contexts: from mass graves and ossuaries, to loose assemblages devoid of any clear spatial, chronological or anatomical arrangement. Due to that, the scope of potential research can be significantly reduced – and, therefore, as well the data acquisition and its further interpretation. Such somewhat limited scientific value may therefore bring to mind questions of ethical nature: How one should proceed with commingled and fragmentary human remains? Is it in interest of science, or a matter of ethics and little more?

Based on the example of osteological material from rescue excavations at the former Saint Gothard settlement in Poznań, Poland, the purpose of this paper is to attempt answering these and more questions – highlighting methodological considerations derived from author's own observations, and including a list of recommendations for both the analyses, as well as for ethical treatment of the remains.

5 THE EXPERIENCE OF THE BIOARCHAEOLOGICAL RESEARCH OF THE 19TH CENTURY CEMETERY IN LVIV, UKRAINE

Abstract author(s): Unhurian, Veronika (Institute of Archaeology, National Academy of Sciences of Ukraine) - Zlatohorski, Oleksi (Specialized Institution „Volyn Antiquities“) - Osaulchuk, Oleh (Scientific and Research Centre «Rescue Archaeological Service» of the Institute of Archaeology, National Academy of Sciences of Ukraine)

Abstract format: Oral

In the autumn of 2022, an expedition of the Research Center “Rescue Archaeological Service” of the Institute of Archaeology, National Academy of Sciences of Ukraine (Lviv, Ukraine) explored a part of the 19th century Stryi cemetery covering the area of 5501 m². Despite the extensive experience in rescue archaeological research of cemeteries, archaeologists first encountered with such a density of archaeological objects - over 1,700 graves were discovered and over 1,400 burials were explored. Taking this into account, we can state about unique archaeological research for Ukraine.

Since the preventive nature of the studies, the specifics of the project were extremely short deadlines for identifying, fixing and processing of the materials. Therefore, the excavations of the Stryi cemetery also posed many challenges for bioarchaeologists: how to plan your work in such a way as to collect as much information as possible in the shortest time?

Our paper deals with the experience of working with a large skeletal collection of the Stryi cemetery and the research issues of modern funerary sites in Ukraine.

6 PERCEIVING DEATH, BETWEEN THE 16TH AND 19TH CENTURIES, IN A BORDER FORTRESS OF THE NORTHWEST OF PORTUGAL, VALENÇA

Abstract author(s): Alves, Alexandrina (Lab2PT - Minho University; CIAS - Coimbra University) - Fontes, Luís (Lab2PT - Minho University) - Silva, Ana Maria (Department of Life Sciences, University of Coimbra; CEF - University of Coimbra; UNIARQ - University of Lisbon)

Abstract format: Oral

The main goal of this work is to analyse and understand, through archaeological, anthropological, and historical data, how cemeteries evolved in a modern fortress, located in the northwest border of Portugal, called Valença.

This small city, on the top of a hill, south of the river Minho, has a privileged localization on the Portuguese northwest border with Galicia, Spain, and was a bastion of the border defence, along the centuries.

Despite the city being surrounded by defensive walls, and so limited to expand, it has two medieval churches, two modern churches, a chantry and a nuns convent, each one with their own burial grounds, until 1850, when the public cemetery was consecrated outside the fortress.

The historical data, through military cartography and parish records, bring some light into the burial ground organization between 16th and 19th centuries, and all the pressures that those spaces suffered from the military occupation and the several death crises identified between the 16th and 19th centuries.

The archaeological and anthropological data, from the excavations, allow us to question the spatial and rituals adaptations to the military needs and civilians' beliefs along those centuries. Moreover it seems that the military environment has deeply influenced the burial grounds management and dedicated area to the dead.

7 ON TOP OF THE HILL - THE STONE, THE BROKEN CROSS, AND THE BABA. POSTMEDIÉVAL STELAE CEMETERIES IN NORTH-EASTERN POLAND

Abstract author(s): Lepionka, Hubert (Podlasie Museum in Białystok)

Abstract format: Oral

Old necropolises of various religions and nationalities that for generations have lived along the border are typical features of the Podlasie Voivodeship landscape. The "mogilki" cemeteries stand out among the widely known Christian, Jewish and Muslim burial grounds. In the Podlasie dialect, "mogilka mahilnik", "mohilnik," and "mohilki" refer to an old rural cemetery or a location where graves are marked with stones. These unusual sites are usually located in Podlasie, near to early modern villages, on natural slopes. Despite the prevalence of traditional tales regarding the origins of the cemeteries, two issues remained unresolved: Who was buried there, and when did these cemeteries continue to function?

Presented study exposed the complex organization of the Polish-Lithuanian Commonwealth's lowest social strata burial ceremonies. Survey research verified non-invasive investigations' results that cemeteries are spatially organized and contain more complicated stone constructions than previously believed. Cemeteries from the second half of the 17th to the middle of the 18th century might be dated by coins found in tombs that had been excavated. Finally, the project also verified old legends and restored the stele cemeteries in the memory of local inhabitants.

8 DIACHRONIC TRENDS AND SOCIAL STRATIFICATION IN A LATE-MEDIÉVAL AND POSTMEDIÉVAL CEMETERY FROM LUXEMBOURG CITY

Abstract author(s): Kremmer, Anne (Department of Geosciences, AG Biogeology, University of Tübingen) - Bocherens, Hervé (Department of Geosciences, Palaeobiology, University of Tübingen; Senckenberg Center for Human Evolution and Palaeoecology - HEP, University of Tübingen)

Abstract format: Oral

Since its first mention in 963AD, the fortress of Luxembourg City had been expanding steadily throughout the medieval times. However, it is only in 1443AD, after the conquest by Philip the Good, duke of Burgundy, that the city of Luxembourg, which by then had become one of the strongest fortresses in western Europe, got caught between the fronts of the major political forces of the time. From then on until the dismantling of the fortress in the mid-19th century, life in Luxembourg City had been dominated by foreign occupations, sieges and wars. In order to assess the impact these times of political unrest had on the population of the city, 391 individuals buried inside the cloister and on the cemetery grounds of a Franciscan friary were analysed. 14C analyses and evaluation of archaeological data allowed to identify two main burial phases: an older one dating from the mid-14th to the mid-16th century and a younger one dating from the mid-16th century to the cemetery's dissolution. The aim of this study is to investigate whether there are detectable changes in physical activity, health, and diet, and thus in living conditions over time and amongst different socioeconomic groups, represented by the cloister and cemetery burials. These questions were addressed by examining palaeodemographic parameters, stature and growth, markers of physical activity, diseases as well as indicators of diet and nutritional status, using a combination of osteological and bioarchaeological methods such as stable isotope analysis (Nitrogen-15 and Carbon-13). A comparison to contemporaneous rural, urban and monastic sites as well as to other cemeteries in the city revealed an overall high standard of living conditions for the people interred in this burial ground and revealed further differences between cloister and cemetery burials, pointing towards a clear social stratification within the same burial complex.

9 **ADRO VELLO (O GROVE, PONTEVEDRA, SPAIN): AN APPROACH TO FUNERARY PRACTICES AND CHILDHOOD OF A LATE MEDIEVAL/POSTMEDIEVAL NECROPOLIS**

Abstract author(s): Colmenares Prado, Marta - Mangas Carrasco, Elvira (CRETUS, EcoPast, Area of Archaeology Department of History, Universidade de Santiago de Compostela) - Fernández Fernández, Adolfo (Department of History, Universidade de Vigo) - López Costas, Olalla (CRETUS, EcoPast, Area of Archaeology Department of History, Universidade de Santiago de Compostela; Department of Archaeology and Classical Studies, Stockholm University)

Abstract format: Oral

Childhood is a topic of great interest in the past societies research, but of great complexity when approaching it from archaeology. The study of funerary practices as well as the human osteoarchaeological remains from a given necropolis provide an excellent opportunity to deepen into the concept of childhood, in this case, of a medieval and postmedieval community. We present here the main results of the study carried out on the osteological remains obtained during the 2017 mission at Adro Vello site. Adro Vello (O Grove, Pontevedra, Spain) is a coastal rural necropolis, considered highly representative and iconic for the medieval and postmedieval Galicia (NW Iberia). The campaign comprised the excavation of a large balk (named1.2017; 2 x 1 x 0.8m) left by the old missions. Minimum Number of Individuals (MNI) of fourteen skeletons were documented - seven articulated and seven disarticulated. Eight were non-adult individuals, six under one year-old. The burial practice is consistent with the Christian norma - supine position, W-E orientation and without grave goods. The pathological features are among those common in archaeological populations - osteoarthritis, cribra femoralis, fractures, etc. These results were compared with those from earlier excavations. We discussed the management of cemetery space and the relationship of burials with other structures. We focused especially on the high presence of very young individuals, including newborns and perinatal skeletons, buried alongside adult individuals in this Christian cemetery - an area where burials were supposed to be reserved for baptized members of the community.

10 **FORGOTTEN UNTIL THE JUDGEMENT DAY. SOME INSIGHTS INTO AN EARLY MODERN CEMETERY IN DRAWSKO, POLAND**

Abstract author(s): Gembicki, Maciej (The Faculty of Archaeology University of Adam Mickiewicz) - Polcyn, Marek (Lakehead University)

Abstract format: Oral

During the years 2008-2019, the Slavia Foundation conducted excavations in an early modern cemetery in Drawsko, Poland. According to our latest findings, the cemetery, which had been used for almost 250 years, was not a conventional cemetery, used mainly during the great epidemics that hit the surrounding lands in the 17th and 18th centuries. The deceased buried there meant to be a real threat in the eyes of the living, and as such required special treatment. The inhabitants of Drawsko developed several apotropaic practices that prevented the dead from coming back to life, such as decapitations, crushing bodies with stones, placing sickles around the neck or putting coins or flints in the mouth. So far, out of over 500 examined burials, almost 17% bear clear traces of apotropaic practices, which is the highest percentage among the examined cemeteries in Poland. This phenomenon may be explained by the combination of two factors: the common belief in the so-called „upióry“, that refers to dangerous creatures that return to life unless appropriate apotropaic treatments have been performed, and the belief that the plague is the effect of evil powers whose victims also pose a threat to the living. As a result, the cemetery in Drawsko shatters the dualistic discussion on typical and atypical burials, giving an extraordinary example of the burial rituals of Polish peasants.

11 **„HOLD ON TIGHT” – BIOARCHAEOLOGICAL INTERPRETATION OF A FEMALE SKELETON WITH SIGNS OF CORSET WEARING FROM 17-18TH CENTURY, HUNGARY**

Abstract author(s): László-Mateovics, Orsolya (Hungarian National Museum - Magyar Nemzeti Múzeum) - Perger, Andrea (Textile and Costume Collection Department, Museum of Applied Arts, Budapest) - Csiki-Deminger, Csilla (Museum of Kuny Domokos, Tata) - Libor, Csilla (Hungarian National Museum) - Molnár, István (Rippl-Rónai Museum) - Schmidt Mayer, Richárd (Museum of Kuny Domokos) - Zay, Orsolya (István Dobó Castle Museum)

Abstract format: Oral

Skeletal evidence of corsets is mainly attributed to cemeteries from the Victorian Era, though it is known from written sources that have been used widely in Europe. Only a few examples have been known in the bioarchaeological record, however, tightlacing just like other body modifications, is also a remarkable source of past human behaviour. The spatial and temporal distribution of this fashion still needs more examples to refer to other evidence than skeletons show. Though recognizing such change is not always straightforward. The skeletal changes of the rib cage and the pelvis are named as typical signs that can be confounded with other pathologies which can also lead to the compression of the rib cage. Another restrictive factor is that the amount of extensive bioarchaeological research on post-medieval and

early modern cemeteries is scarce compared to earlier centuries. This paper will provide the first case of corset wear from Hungary and discuss this further data on the usage, effect and history of this unique clothing.

12 A GOLDEN COIF FROM SZTÁNA - FROM ARCHAEOLOGICAL FINDING TO THE REPRESENTATION OF SOCIAL STATUS

Abstract author(s): Zay, Orsolya (Dobó István Vármúzeum)

Abstract format: Oral

A rare renaissance hairnet was found in Sztána (RO), in the protestant church under renovation in 2021.

Archaeologists excavated in situ the finding, found in the last hours of the excavation, most of whose metal thread parts were preserved. It was safely stored in a room of the reformed community center next to the church, until restoration work began. It was a piece of rare and outstanding value, so we considered it especially important that it be accurately documented from the excavation through the restoration to the publication.

The morphology of the metal threads and the embellishment was examined with an electron-microscope, and the material composition with spectroscopic elemental analysis (EDX, SEM). According to our assumption, they were made of precious metals, gold and silver could be identified.

For finds with such complex materials, such as pieces of clothing, where organic and inorganic materials are present at the same time, the joint work of the textile- and metal conservator and the archaeologist is important.

Next to the material analysis the researchers wanted to interpret the identity of the owner. As benefactors of the ecclesiastical place, the Gyerőffy family, who played an important role in the history of early modern Transylvania and reached the rank of nobility, could use the church of the hidden village as a burial place, in the period of inadequate public security, between 1530-1550. The presentation will show the process when an archaeological finding, compared with historical sources and ethnographical parallels, reveals the rank and social status of a person. Through an item we can discover gender related garments, social law for women and regulations for married and unmarried women in the 16th century. Furthermore the coif points to the background of the professional craftsmanship which related to the fashion industry of the late renaissance Hungary.

13 POST-MEDIEVAL CEMETERY OF SZÉCSÉNY, HUNGARY

Abstract author(s): Balogh Bodor, Tekla - Szénásy-Laczkó, Virág - Zsiga-Csoltkó, Emese (Hungarian National Museum) - Szolnoki-Anderko, Anna (Kubinyi Ferenc Museum) - Reich, Szabina (Szent István Király Museum) - Libor, Csilla (Hungarian National Museum)

Abstract format: Oral

Back in 2019, we conducted a preventive archaeological excavation near the city center of Szécsény (Nógrád county, Hungary). The archaeological site is located a few meters from the medieval old town. Although the direct area of the site has been populated over the years, there was a parking lot on the territory of our excavation. Several excavations were carried out in the neighborhood earlier, when the post-medieval cemetery of Szécsény was successfully identified. Our excavation probably concerned the center and north-eastern part of the cemetery. We excavated around 286 graves. Despite the fact that 80 percent of the skeletons were poorly preserved, in some cases we found whole skeletons in good condition. In most of the graves, we excavated several elements of the wooden coffins, where we could even observe the decoration elements of the coffins. One question for future investigations is, how the different conditions of the skeletons can be explained (possible explanations are the material of the wooden coffin or the inner lining of the coffin, the chemical composition of the soil, or the urban environment).

Regarding the archaeological artifacts, the cemetery was rich, and corresponded to post-medieval trends (among the artifacts there were jewelry, hairpins, elements of religious belief: rosaries, crosses, devotion medals). Most often, we excavated various elements of women's wear: corollas, which were mainly decorated with beads, sequins and sometimes with garnet-shaped flowers. Another significant element of the artifacts were the upper wears, which we observed in three graves, where the textile remains and metal threads of the clothing were well preserved. The procession of the cemetery and artefacts is in progress, but based on our preliminary observation, the cemetery can be dated to the end of the 17th century and the first half of the 18th century.

14 **EMPTY PLACES? SITES OF MASS EXTERMINATION FROM 1939 IN THE POMERANIAN PROVINCE, POLAND, AS A FORM OF CEMETERIES**

Abstract author(s): Kobialka, Dawid (Institute of Archaeology, University of Łódź) - Rennwanz, Joanna (Institute of Archaeology and Ethnology, Polish Academy of Science)

Abstract format: Oral

Nowadays, it is estimated that between September and December of 1939, about 20-30 thousand Polish citizens of the pre-war Pomeranian province were murdered by Germans. One can propose that sites of mass extermination from 1939 in the Pomeranian province can be understood as a unique category of war graves and cemeteries. Many of them were exhumed in the first post-war years. Similarly, burial pits, shooting ditches, sand pits, etc., in which the victims' bodies were hidden by the perpetrators, have been levelled during the last few decades. Hence, a somewhat common belief is the statement of one of our informants: "Sir, there's nothing there, everything was dug up after the war".

The presentation intends to sketch the context, goals, methods, cognitive and social potential that guide the international and multidisciplinary research project entitled "An Archeology of the Pomeranian Crime of 1939". The idea behind it is a deep conviction that the German mass crimes of the first months of 1939 in the Pomeranian province within the so-called Intelligenzaktion and T-4 (which are now referred to as the "Pomeranian Crime of 1939") are associated with leaving a huge amount of traces. My thesis is that contemporary archaeology has the appropriate experience, tools and methods to discover them. The use of a multidisciplinary approach (e.g. archaeology, history, ethnography, forensic medicine, genetics) allows for a holistic research into the past of selected sites of mass extermination as well as their contemporary role and significance for local communities. Chojnice's Death Valley, from which, in 2021, almost a ton of burnt human remains of the victims was excavated will be used as a case study.

15 **« MY NAME IS NOBODY » - THE SOLDIERS OF THE BATTLE OF ORTHEZ (FRANCE)**

Abstract author(s): Calmettes, Philippe (Inrap; UMR 5607 Ausonius) - Nichols, Alistair (Society for Army Historical Research) - Souquet, Isabelle (Inrap; UMR 5199 Pacea)

Abstract format: Oral

In 2016 an archaeological dig at Orthez (France) revealed the presence of a hospital, a communal cemetery and above all that of a vast and remarkable grave of 26 soldiers killed during the battle of 27 February 1814. This was fought between Napoleon's army and that of the allies, made up of British and Iberian troops. Study of uniform buttons and other objects found with the soldiers confirm that they belonged to both sides. Such a deposit is unprecedented in France and among the many lines of research that are presented is the opportunity to identify soldiers, both French and allied, by combining historical, archaeo-anthropological, genetic, isotopic and biochemical data. The investigation involves gathering the available data from each individual skeleton (age, sex, physical information, geographical origin, environment and identification of the environment in which they grew up) by study and analysis.

This interdisciplinary research is essential in understanding this deposit on several counts. This includes investigation of the composition of the different armies, such as the recruitment criteria at the end of the First French Empire and the geographical origin of the individuals, as well as the care and treatment of the deceased according to the nationality of the armies in which they served. One of the unacknowledged objectives is to try to give them a name.

If the 19th Century is so close and our knowledge of the subject seems well established, the study of the pit of the battle of Orthez shows that our understanding of the reality of the Napoleonic period is fragmented and far from complete.

We propose to present the exploitation of the different lines of research and the first results.

16 **MASS GRAVES FROM A MILITARY HOSPITAL FROM LISBON (16TH-18TH CENTURIES): ANALYSIS OF THE SKELETAL REMAINS**

Abstract author(s): Leirião, Carina - Carvalho, Liliana - Amarante, Ana (University of Coimbra, Research Centre for Anthropology and Health, Department of Life Sciences) - Henriques, Susana (EON - Indústrias Criativas) - Wastlerlain, Sofia (University of Coimbra, Research Centre for Anthropology and Health, Department of Life Sciences)

Abstract format: Oral

Between the 16th and 18th centuries, a military hospital operated in Lisbon, near the Castle of São Jorge. Associated with the hospital, a burial ground with six phases of use was identified, being the third characterized by mass graves. This work aims to analyse the 56 skeletons recovered from this phase, at both palaeodemographic and palaeopathological levels. Age-at-death estimation was performed with standard methods based on skeletal development and degenerative alterations for non-adults and adults, respectively. In all, 57.1% were non-adults and 32.1% adults. In 10.8% of the individuals the poor state of preservation precluded any age estimation. The lower age range for the non-

adults was 12-14 years (3.6%). For adults, sex estimation was based on metric and morphological analyses. In 22.2% of the cases, sex estimation was not possible due to preservation issues. All the other adult individuals (77.8%) were males. All bone lesions were analysed, being enthesal changes and osteoarthritis classified according to their degree. The most common pathological lesions were the physiological stress indicators (60.7%), supporting the literature which claims poor life conditions, epidemics, and famines in the studied era. Equally frequent were the traumatic and enthesal changes (37.5%). Also, periosteal lesions were identified in 12.5% of the individuals, probably of various aetiologies. The biological profile of the individuals, together with the pathological conditions observed, seem to reflect a military background, with men recruited since young age, submitted to great physical effort and possibly interpersonal violence. These individuals may have been victims of an epidemic outbreak once these were frequent at the time, and they were inhumed in mass graves.

17 THE WINDS OF WINTER: THE 1710 PLAGUE CEMETERY IN TALLINN, ESTONIA

Abstract author(s): Malve, Martin (University of Tartu, Faculty of Science and Technology, Institute of Genomics; University of Tartu, Faculty of Arts and Humanities, Institute of History and Archaeology) - Keller, Marcel (University of Tartu, Faculty of Science and Technology, Institute of Genomics) - Aguraiuja-Lätti, Ülle (Tallinn University, Archaeological Research Collection)

Abstract format: Oral

In 1710 Tallinn suffered from the most prominent outbreak of plague, which caused more deaths than any previous epidemic in the town. Cemetery reflecting the victims of this outbreak was archaeologically excavated in 2018–2021 and the burial ground remains the largest of its kind so far discovered in Estonia.

Rescue excavations revealed a total of 117 burials from the site, with the graves situated irregularly over a large area. The burial ground was used for a very limited time. The deceased were buried mostly in double and triple graves, but also in single and mass graves. Based on artefacts collected from the burials, both urban and suburban commoners, peasants, also Swedish and Russian soldiers and potentially their family members, were interred to this cemetery.

Out of 117 individuals 38 were males, 55 were females and 20 were non-adults. The high prevalence of female burials was surprising, as such a large percentage of female skeletons has not been observed from any other Estonian cemetery that has been osteologically analysed. Most of the buried were young adults (17–25 years), whereas the number of non-adults and older individuals was remarkably low. The analysis of the skeletons shed more light on the lifestyles and habits of the individuals. Irregular wear of the front teeth due to long-term pipe smoking was observed for both sexes. Healed blunt force and sharp force injuries were also documented. Furthermore, numerous dental pathologies (e.g. dental calculus and caries), degenerative diseases (e.g. osteoarthritis of the limb joints and spondylosis of the spine) and few cases of healed fractures were detected on the skeletons. Initial results gathered from aDNA and stable isotope analysis further support osteoarchaeological results and written data.

18 TWO SITES, TWO MASS GRAVES, TWO STORIES

Abstract author(s): Kozakaite, Justina (Association of Lithuanian Archaeology; Vilnius University, Faculty of Medicine) - Konovalovas, Aleksandras (Vilnius University, Life Sciences Center)

Abstract format: Oral

Uncovering the mysteries of the past is a timeless quest that continues to captivate us. In Lithuania, 17th-19th century cemeteries and their bioarchaeological materials hold a wealth of information waiting to be explored. Despite previous paleopathological case studies that have shed light on these populations' lifestyles, diets, and medical practices, the use of cutting-edge techniques like paleogenomics to understand the prevalence of diseases, the vulnerability of certain people, and the impact of historical events has been limited. Until recently, the answers to questions concerning these topics have relied on foreign institutions' goals and ongoing projects.

This presentation focuses on two mass graves in present-day Lithuania, each with a unique story to tell. The first site, located in Panerių street 12 in Vilnius, dates to the 17th-18th centuries, while the second, in Skongalio street at Kėdainiai, is from the 17th century. Despite the absence of any apparent traumatic injuries, the presence of mass graves raises questions about the causes of death, which were most likely swift and devastating.

We employed the latest long-read DNA sequencing technologies in this research and validated our results using a standard next-generation sequencing platform. Our findings affirm the suitability of these methods for analyzing ancient DNA and provide critical insights into our past.

THE DARK SATANIC MILLS: THE BIOARCHAEOLOGY OF HEALTH IN ENGLAND DURING THE INDUSTRIAL REVOLUTION

Abstract author(s): Buckberry, Jo (University of Bradford) - Crane-Kramer, Gillian (SUNY Plattsburgh)

Abstract format: Oral

The Industrial Revolution represented one of the greatest economic, social and biological transitions in the history of humanity. Increased excavation and analysis of post-medieval cemeteries in England allows us to investigate how this transition altered the patterns and experience of disease, and to directly compare the skeletal evidence with historical data.

Documentary data speaks of high infant mortality and deaths due to infectious, nervous and respiratory diseases. We compared age-at- and cause-of-death for 335,055 individuals from the annual report of the Registrar General for 1837-8. This revealed stark contrasts in life expectancy and disease experience in rural and urban areas, with London comparing favourably to the newly developed urban centres of the midlands and north. While infectious diseases were rife in towns and cities, more deaths attributed to TB were reported in rural areas, indicating that while migration to urban areas was a risk to health, urban to rural migration by those with long-term conditions might have permitted family support during chronic illness.

We collated published demographic and pathological data for 4151 skeletal individuals dated c.1700AD (industrial) and 1260 individuals dated to between c.1100 and c.1750AD (pre-industrial). Statistically significant differences were observed for age-at-death but not sex. Cribra orbitalia, periosteal reactions, rib lesions, rickets, scurvy, osteoarthritis, fractures and dental diseases were all more prevalent in the Industrial period ($P < 0.01$). Unexpectedly, the prevalence of osteomyelitis declined while TB, treponemal disease, maxillary sinusitis, osteomalacia, osteoporosis, DISH, and gout did not change. Overall, our data support the hypotheses that the Rise of Industry correlated to significant decline in general health, but not an increase in all pathologies. This paper will compare and contrast the documentary and skeletal data for England to build a more holistic view of population health than either one could produce alone.

Funded by the Royal Society (IES\R1\180138).

A. EVALUATING NON-METRIC TRAITS OF HUMAN TEETH TO IDENTIFY BIOLOGICAL RELATEDNESS IN MEDIEVAL POPULATIONS FROM EASTERN ROMANIA

Abstract author(s): Popovici, Mariana - Ciorpac-Petraru, Ozana-Maria - Groza, Vasilica-Monica (Romanian Academy – Iasi Branch, “O. Necrasov” Center of Anthropological Research; Alexandru Ioan Cuza University of Iasi, Faculty of Biology) - Bacumenco-Pirna, Ludmila (Romanian Academy – Iasi Branch, Institute of Archaeology; Alexandru Ioan Cuza University of Iasi, Faculty of Biology) - Bejenaru, Luminita (Romanian Academy – Iasi Branch, “O. Necrasov” Center of Anthropological Research; Alexandru Ioan Cuza University of Iasi, Faculty of Biology)

Abstract format: Poster

During archaeological research in 2021, at Vovidenia Church from Iași (Romania), 114 human skeletons of 16th-17th centuries were discovered.

The present study is focused on the dental morphology and identifying relationships between individuals based on non-metric traits. There are analyzed the frequencies and variability of non-metric dental traits, such as cusps, roots, tubercles, grooves, and ridges of teeth. The traits were scored using the ASUDAS System. Descriptive analysis was performed for each of the observed morphological features, including the frequency of occurrence, and its degree of expression.

Out of the 17 of non-metric dental traits which were followed in the sample, only 10 of them have been identified. The most common morphological feature identified on the occlusal surface of mandibular second molars was the pattern with four cusps and “x” groove (90% of molars). The fifth cusp, represented by large size hypoconulid was identified in 20% of the lower second molars (M2), while Carabelli trait expression had a frequency of 33% in the upper first molars (M1), and 11% in the upper second molars (M2). Also, enamel extension and deflecting winkle were observed in the first molars (M1).

The Correspondence Analysis, based on the measure of the inertia, underlines affinities but also divergences inside the sample and between different local medieval populations. Some features highlight the particularities of this sample, in which potential biological relatedness, based on non-metric traits, are discussed in the work.

This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-III-P4-PCE-2021-1180, within PNCDI III.

LANDSCAPES AND ARCHAEOLOGIES OF PRESENT COMMUNITIES: NOVEL ENGAGEMENTS TOWARDS ENRICHING GLOBAL AND LOCAL HISTORIES

Session theme: 6. Contested Pasts & Presents

Session organisers: Petek-Sargeant, Nik (University of Cambridge; British Museum) - Cruz, M. Dores (University of Cologne) - Seitsonen, Oula (Lakehead University; University of Oulu)

Session format: Regular session

There has been a significant push towards making archaeology more accessible, inclusive, and approachable and to engage local and indigenous communities. This has resulted in enriched narratives, strengthened connections to local landscapes, and sometimes alternative forms of perceiving temporal and geographical pasts. For example, Afro-descendant communities are weaving new stories in partnership with heritage specialists and archaeologists, using ethnographic and archival collections to link their memories to ancestral lands; the geographically distant Sami, First Nations, and Aboriginal communities are sharing experiences of archaeological research with each other and developing frameworks of engagement. It is this context of global exchanges and theories that highlights a decolonisation of archaeology, but also Europe's slower uptake of community engagement compared to Africa, where local involvement and contributions have a longer history.

This session explores new approaches and theories of decolonisation of archaeological research and community engagement, of ways to bridge the gap between (historical) archaeology and present communities, as well as the role of archaeology and cognate disciplines in the construction of identity in time and place. Papers will examine how theory and methods from around the world can inform and reshape European archaeological approaches and local histories, as well as compare European archaeologies to global ones. Archaeology is fertile ground for creating local social and cultural capital, and by tapping into themes of displacement, colonialism, digital preservation, and environmental change, we can see how dialogues and exchanges on community engagement and decolonisation benefit European archaeology.

ABSTRACTS

1 ENGAGING COMMUNITIES IN HISTORICAL ARCHAEOLOGY: REFLECTIONS FROM KENYA

Abstract author(s): Petek-Sargeant, Nik (University of Cambridge)

Abstract format: Oral

Archaeology in Kenya and elsewhere in East Africa has a long history of engagement with and contributions from local communities. Since post-independence in the 1960s and 70s, archaeologists have approached communities and vice-versa to seek information on the histories of landscapes, settlements, and their ancestors, although many communities were treated as analogues for archaeological cultures, portraying them as unchanging, and details from their oral history dismissed. Since the 90s there have been calls to historicise communities and address the disjuncture between the communities, their history, and the archaeology. Through these calls came a focus on the historical period and the last few centuries, although the archaeology has been drawn into Eurocentric discussions about colonial disruption. However, today's postcolonial historical archaeologies in Africa envision history as community memory and they are moving away from correlations between history and colonial encounters. Instead it is becoming about collaboration and engagement with the aim of co-creating narratives that are usable and connected to past and present political and socio-ecological issues.

In this paper, I will discuss how a recent multi-year collaboration with Kenya's Ilchamus community is bringing value to archaeology and helping reinterpret the record as well as ethnographic museum and archive collections. By interacting with the archaeological assemblage and museum collections at exhibitions, workshops and crafting sessions, the community entangled them in the assertion of identity. The paper will use this case study as an example of new approaches to a historical archaeology that moves away from disruptive encounters and privileges internal dynamics of East African communities. It will compare it to Anglo-American and European approaches to see how dialogues with communities can benefit archaeology and theory globally.

2 EXCAVATING EMPIRE: (RE)FRAMING COMMUNITY-BASED ARCHAEOLOGY IN SÃO TOMÉ

Abstract author(s): Cruz, M Dores (University of Cologne)

Abstract format: Oral

A growing attention to historical archaeology has shifted the field into practices that involve local communities, making the discipline more inclusive and relevant, while also becoming a source of empowerment by stressing different ways of knowing and doing. Africanist historical archaeology has been particularly effective in approaching these issues from a decolonizing, interdisciplinary lens that challenges authorized metanarratives to enable alternatives that

build upon local heritage and its impact on contemporary communities. My paper aims to introduce a project endeavoring to decolonize landscapes of power and engage local communities by implementing sustainable and participatory archaeological research in the island of São Tomé (São Tomé e Príncipe). The contribution discusses how the objectives of an action-driven, critical and decolonizing archaeology are often ambitious enterprises, fraught with obstacles, which must take into account local historical and socio-political conditions. The second smallest country in Africa, São Tomé e Príncipe has a heterogeneous population that has been affected by colonialism in different ways (e.g., slavery, indentured labor, contract work, maroon resistance). Despite its pioneering role in the construction of the Atlantic world and the development of plantations systems, archaeological research is completely absent in the country. Thus, it ideally places the project for promoting community engagement since the inception of the research, and experiment with different ways of incorporating and negotiating diverse interests. The project strives to reconcile different forms of knowledge for a better understanding of the past and to achieve the potential for social intervention. Ultimately, the goal is to decenter historical archaeology in São Tomé from empire to focus on marginalized communities, past and present.

3 IDENTITIES, ONTOLOGIES AND CULTURAL REVITALIZATION: NEW PERSPECTIVES IN HISTORICAL ARCHAEOLOGY OF ROZVI LANDSCAPES IN ZIMBABWE

Abstract author(s): Machiridza, Lesley (Institute of African Studies and Egyptology, University of Cologne; Department of Development Studies, History and Archaeology, Simon Muzenda School of Arts, Culture and Heritage Great Zimbabwe University)

Abstract format: Oral

Indigenous communities and their past(s) have always attracted scholarly attention, albeit through a Western lens compromised by colonialism. The 2000s have however, ushered in a new era of academic decolonization, where indigenous narratives are slowly reclaiming their position in archaeology and heritage management practices. In Africa, the immaterial and material help inform/define each other, so it is crucial to understand both dimensions of memory and knowledge production in archaeological interpretations. Since the interpretation of Rozvi archaeology has partly suffered from this conceptual and methodological error, the recent surge in diverse Rozvi groups frequenting Zimbabwe Culture sites as their heritage-sacred places offers new opportunities for in-depth reflections aimed at redressing this anomaly. These ongoing living heritage practices signify crucial intergenerational dialogues in the form of narratives, oral traditions, memories and heritage that has always been silenced, sidelined and despised as “unscientific” knowledge in most related archaeological enquiries. Therefore, this study taps into multiple archival and ethno-historical sources in attempts to pin-point Rozvi ontologies and epistemologies that may advance knowledge frontiers or better still help inform their proper archaeological diagnosis.

4 VAAKUNAKYLÄ: COMMUNITY HERITAGE AND MEMORIES ON THE EDGES OF A NORDIC WELFARE STATE

Abstract author(s): Seitsonen, Oula - Hyttinen, Marika - Matila, Tuuli (University of Oulu)

Abstract format: Oral

Vaakunakylä was until the 1980s a residential area near the center of the town of Oulu, northern Finland. It was established during the Second World War as a German military camp, and after the war became a working-class neighborhood when homeless evacuee Finns moved into the barracks left by the Germans. Through the decades it gained a bad reputation in the outsiders eyes, and finally in the 1980s the city forced people to move out from Vaakunakylä. Their houses were torn down and the area was levelled and became an idle forest for decades. The decision to remove this community was influenced by the Finnish State's ideal commitment to a seemingly classless welfare society living in harmony, and also to the area's complex Second World War history related to siding with the Nazis. However, the former inhabitants of Vaakunakylä did not recognize or approve with the outsiders' and officials view of their home as an ill-reputed slum that needed to be cleaned out.

During our archaeological excavations in Vaakunakylä, preceding the development of the area for a grand housing exhibition in 2025, many of the old inhabitants were enthusiastic that their past and heritage was finally remembered after decades of silence. Many of them were eager to share their personal memories and recollections of the life and times in Vaakunakylä. These were collected in co-operation with the city of Oulu which has finally decided to acknowledge their pasts. Archaeological and ethnographic inquiries can in some ways counter the dominant narrative of the social problems and quality of life in the area. In this presentation we discuss the community work with the former residents, the differences between the official perspective and the local narratives of lives in Vaakunakylä, and how the former inhabitants' perceived archaeologists digging into their own pasts.

5 **DISMANTLING EUROCENTRICISM IN INDIGENOUS HISTORY: THE ARCHAEOLOGY OF FOREST COMMUNITIES IN THE NILGIRI MOUNTAINS, SOUTHERN INDIA**

Abstract author(s): De Simone, Daniela (Ghent University)

Abstract format: Oral

The colonial misrepresentation of Indian forest-dwelling communities or “tribes” as primitive, hence a-historical, viewed them as the subject of ethnographic studies rather than archaeological research. As a result of this biased perspective rooted in racial theory and colonial governance, which is still dominant today in the study of the ancient world, archaeological investigations in Indian forests are rare, and museum collections of archaeological artefacts from forested areas are instead held by ethnography departments. The Nilgiri Archaeological Project, a 5-year research programme based at Ghent University, aims to move beyond this Eurocentric approach by developing a new trans-disciplinary framework to study the pre-colonial history of Indian forest communities. Our research focuses on the Nilgiri Mountains of southern India, a region of montane subtropical forests, and the homeland of several indigenous communities. This paper will discuss three common colonial misconceptions on the history of forest-dwelling communities still guiding research, and deconstruct them based on the preliminary results of our project: 1. ‘Forests are (nearly) empty spaces inhabited by “tribes”’: the mountaintops and ridges of the Nilgiri Mountains are dotted with megalithic tombs, while dolmens and carved memorial stones are found throughout the region; 2. ‘Forest communities are remote and isolated’: grave goods from the Nilgiri burials, dating between the 1st and 16th century CE, include artefacts imported from the lowlands, while oral histories reveal the presence of an indigenous royalty having relations with the polities of the plains; 3. ‘Forest communities practice a subsistence economy’: the region of Coimbatore, at the feet of the Nilgiri Mountains, yielded the largest number of Roman coins found in India. Indian forest-dwellers were first-tier suppliers of timber and non-timber forest products to the “spice trade” in the Indian Ocean but, with the establishment of the colonial enterprise, they were relegated to a subaltern role.

A. **BRIDGING BOUNDARIES OF PRACTICE: INDIGENOUS HERITAGE AND IDENTITY IN THE SOUTHEASTERN CARIBBEAN**

Abstract author(s): Antczak, Oliver (University of Cambridge)

Abstract format: Poster

The Southeastern Caribbean faced intense European colonialism starting in the late 15th century. Over the next 500 years, the islands that make up the region have taken diverted paths that, despite their geographical proximity, today keep the islands separated by thick socio-economic, political, cultural and linguistic barriers. Consequently, archaeological, historical, and heritage narratives have struggled to tell an integrated story of the region’s past. For present-day Indigenous communities of these islands—who have resisted through colonial enslavement, erasure, and transculturation—these narratives have mostly failed to meaningfully link them with the pre-colonial past. Through the study of the different colonial histories of Bonaire, Margarita, and Trinidad, this poster aims to better understand how Indigenous identity and heritage processes have been impacted differently on the three islands. Results put into question archaeological interpretations in the region and suggest a move away from European models of heritage management to make archaeology more relevant for present-day communities and facilitate linkages with the past.

199 **ARCHAEOLOGICAL NARRATIVES, SCALES AND THE ISSUE OF SOCIAL COMPLEXITY**

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Souvatzi, Stella (University of Thessaly) - Mina, Maria (University of the Aegean) - Daems, Dries (Middle East Technical University)

Session format: Regular session

The recent epistemological shift in archaeology from the traditional focus on large scales of analysis towards the inclusion of smaller scales has not always resulted in a congruous historical perspective or in the recognition of the necessity of multi-scalarity. A major obstacle is the maintenance of the Eurocentric view of history, deriving from the grand models of social evolution, as a teleological, linear, cumulative, and inevitable ‘progress’ towards hierarchisation. Consequently, many archaeological narratives equate complexity with hierarchy, take hierarchy as the chief mechanism driving social advances, and contrast complexity with simplicity. Yet, archaeology is continually confronted by processes, trajectories and social choices that do not fit into neat preconceived models.

This session seeks to explore alternative models of social complexity in archaeology in relation to archaeological theories and analytical frames for a historical outlook on past societies. It aims to question top-down approaches and to emphasise that a theoretically informed understanding of complexity needs to address a wider range of issues and scales than those conventionally considered and to embrace perspectives more open and dynamic than the brands of evolutionism which often underlie our interpretations.

Papers focus on one or more of the following issues and draw on case-studies across the world:

- How do we problematise historical process(es) in archaeology? Can a multi-scalar approach be key?
- How do we define social complexity? Can relevant discussions in the social sciences inform us? Can theoretical and computational models help us understand the multi-causal drivers of social complexity?
- Does the classification of societies either as simple (i.e., egalitarian) or complex (i.e., unequal) stand up to the test of contemporary social theory?
- Are social hierarchy, technological advances and gender imbalances concomitant with social complexity?
- How can a new understanding of social complexity inform the construction of archaeological narratives?

ABSTRACTS

1 CONCEPTUALISING LONG-TERM TRAJECTORIES OF SOCIAL COMPLEXITY: CAUSAL MECHANISMS, UNCERTAINTY REDUCTION AND PATHWAYS OF DEVELOPMENT

Abstract author(s): Daems, Dries (KU Leuven)

Abstract format: Oral

Human societies have changed dramatically over the last 12,000 years, from small hunter-gatherer bands to highly urbanized, industrialized, and globally connected societies. These changes are often interpreted as increasing social complexity. Yet, what exactly constitutes social complexity and how it changes over time is not always specified. It is all too easy to perceive this change as an almost teleological sequence of progress and advancement towards a better society. No doubt modern societies have produced many benefits worthy of being characterized as progress. However, by recasting all of history in this light, we run the risk of discarding the past as an inherently inferior and altogether different world. In doing so, we lose out on the benefits of understanding long-term patterns of change (and stability) to inform our present and future.

In this paper, I present a novel conceptual framework of social complexity formation from the perspective of complex systems thinking (Daems 2021). The model is based on the core interrelationship of flows of energy, resources and information, shaped by causal mechanisms of decision-making, uncertainty reduction strategies, and pathways of development. This framework provides a bottom-up approach to social complexity as an emergent property in human societies. I apply this framework in a case study of Anatolia (modern-day Turkey) from Bronze Age to early Roman Imperial times (3000 BCE - 200 CE). It is shown that strong trade-offs exist between multiple mechanisms of decision-making that can help understand causal dynamics in social complexity trajectories. This work will not only improve our knowledge of the past *sui generis*, but also elucidate how understanding long-term trajectories of social complexity can inform trade-offs in decision-making and pathways of development in the present.

References

- Daems, Dries. 2021. *Social Complexity and Complex Systems in Archaeology*. London: Routledge

2 SOCIAL COMPLEXITY AND EGALITARIANISM: THE CASE OF THE NEOLITHIC SOCIETIES IN GREECE AND TURKEY

Abstract author(s): Souvatzi, Stella (University of Thessaly)

Abstract format: Oral

Mainstream archaeological theory has persistently tended to equate social complexity with inequality and hierarchy, and social dynamics with economic competition. From this often follows the belief that social dynamics and history are primarily driven by self-interest, divisions and antagonism, privileging social asymmetry. At the same time, for reasons difficult to explain, there is an increasing interest in religion or religious ideals over recent years as a prerequisite for building reciprocity or in order to explain co-operative behaviour. This paper argues for a separation of these concepts and explores alternative models of complexity, bringing insights from social theory and using data from the early farming societies in Greece and Turkey. It focuses in particular on the dialectical interweaving between the political and the moral economy and argues that a theoretically informed understanding of complexity and a multi-scalar approach are necessary both to counter the ego-centred nature of many of the archaeological narratives and to understand better historical process without resorting either to modern Western notions or to the brands of evolutionism which often underlie our interpretations.

3 THE EARLY BRONZE AGE OF ANATOLIA: THE ISSUE OF SOCIAL COMPLEXITY

Abstract author(s): Alpay, Ayse (Middle East Technical University)

Abstract format: Oral

One of the major issues in the EBA archaeology of Anatolia is the lack of consensus among scholars on how to define the concept of social complexity and measure it in an archaeological context. The social complexity is often addressed through and in correlation with the development toward urbanisation. Moreover, places, where surpluses were maintained, are interpreted as an indicator of centralised authority. This rather vague and restrictive perspective ignores different possible social systems. This study acknowledges the diversity of social systems. Following Bergman and Beehner's argument, it proposes that the degree of social complexity of a given society should be measured based on the number of differentiated, horizontally and/or vertically, relationships individuals maintain in a society. Following McGuire's argument, the concept is broken down into variables: inequality and heterogeneity to investigate the "differentiated relationship". By doing it, it aims to measure vertical and horizontal stratification and define the nature of the social organisation of the given sites. In this respect, archaeological footprints are categorised into four primary groups: architecture, spatial location and boundary control, artefacts implying different economic activities, and greater access to exotic goods. In this study, examining the EBA settlement of Bademağacı Höyük as a case study, the issue is addressed using an integrated approach combining Space Syntax with investigating artefact distribution and architecture, estimating population and archaeoastronomical analysis. The result reveals that some identifications and definitions made by the excavators need to be re-evaluated. Instead of centralized authority control over the surplus, it asserts here that there are horizontal and vertical social stratifications with lower degrees of heterogeneity and inequality and social leadership-like authority, and the existence of communal storage facilities.

4 POLITICAL ORGANISATION AT THE EARLIEST LOW-DENSITY, EGALITARIAN CITES IN EURASIA: A TRYPILLIA MEGASITE NARRATIVE

Abstract author(s): Chapman, John (independent scholar) - Gaydarska, Bisserka (Durham University)

Abstract format: Oral

After a prolonged archaeological debate over social complexity and social hierarchy, we seem to have made little progress in understanding Holocene societies. Perhaps the time has come to abandon these terms and look at past communities in different ways. A great starting-point for this urgent task is David Graeber and David Wengrow's (2021) book "The dawn of everything", in which the Western model of social evolution is consistently challenged. One of the case studies on which Graeber and Wengrow have based their critique was the Trypillia megasites (or TMS) of Ukraine – sites which constituted the largest sites in 4th millennium BC Europe and were, in our view, the earliest, low-density cities in the world. Here, we build upon our research at the Ukrainian TMS of Nebelivka to discuss the political organisation which enabled the TMS as a phenomenon to survive for over six centuries.

Our over-arching model of Trypillia political economy is developed from the insights published in David Graeber and David Wengrow's (2021) book "The dawn of everything". We start by relating the term 'cultural schismogenesis' to the size and longevity of the Cucuteni – Trypillia group by re-conceptualising the "Big Other" as an extended moral community. We place in the TMS context Graeber and Wengrow's discussion of the three freedoms – mobility, disobedience and imagined worlds – as well as their three forms of domination – military, esoteric knowledge and charismatic leadership. The combination of the presence of these freedoms and the absence of these forms of domination enables the development of egalitarian relations on a hitherto unimagined scale. We close by considering the key questions raised in this session with reference to the TMS.

5 THE 'ORIGINS' OF 'ANCIENT SOCIETY': GENDER AS A GAUGE OF SOCIAL COMPLEXITY

Abstract author(s): Mina, Maria (University of the Aegean)

Abstract format: Oral

The paper aims to explore the validity of evolutionary models that explain gender asymmetries as an effect of growing social hierarchy and thus complexity. In particular, models of social complexity in Aegean prehistory have by and large proposed a progressive evolution towards "civilisation" with signs of growing social hierarchy and, naturally assumed, gender asymmetry. In order to refute the hypothesis that gender inequality is an inescapable condition of social complexity, we need to deconstruct and assess the models that conflate the two phenomena. If hierarchy proves to be an inadequate measure by which social complexity can be detected archaeologically, or if it can be demonstrated that social hierarchy does not presuppose gender asymmetry, it is proposed that we need to seek alternative ways of approaching the evidence. Studying the archaeological record in terms of heterarchical and/or homoarchical social organisation allows us to negate an a priori equation of social complexity with gender inequality and to identify complexity in non-hierarchical formations.

6 ON THE QUESTION OF REGIONAL VARIABILITY - MULTI-SCALAR ANALYSIS OF BRONZE AGE CERAMIC ASSEMBLAGES IN THE EASTERN CARPATHIAN BASIN

Abstract author(s): Parditka, Györgyi (University of Michigan) - Duffy, Paul (Cluster of Excellence Roots, Christian-Albrechts-Universität zu Kiel)

Abstract format: Oral

During the Middle Bronze Age (ca. 2000-1500/1450 BC) the Eastern Carpathian Basin was populated with tell societies of various cultural traditions. Large-scale narratives of Bronze Age Europe assume regional political hierarchies in this region, but an increasing number of micro-regional studies suggests more variability in the social landscape. While the specific organizational forms that these societies represented are still murky, some non-state level societies in the region present more evidence for institutionalized inequality than others.

This presentation focuses on settlements (both tell and shorter-lived sites) in the territory of the Otomani-Gyulavarsánd cultural tradition. The paper compares the use of decorative techniques and stylistic motifs along with investment in ceramic display at multiple scales: within sites, along river valleys, and across the broader Lower-Körös area.

In most narratives, tells are described as socioeconomic centers, the residence of the social elite, and the focus of trade and redistribution. Through the different measures, we aim to evaluate the potential asymmetrical relationships between settlement types and the extent of consistency in cultural traditions across the landscape. This paper aims to demonstrate that a multi-scalar and less tell-centered approach is advantageous in further unpacking the degree of, and variation in, social complexity found in these societies.

7 DISENTANGLING GEORESOURCESCAPES WITH AGENT-BASED MODELLING: THE CASE OF PREHISTORIC SALT MINING AT DÜRRNBERG, AUSTRIA

Abstract author(s): Angourakis, Andreas (Ruhr-University Bochum; University of Cologne) - Boenke, Nicole (Ruhr-University Bochum) - Stöllner, Thomas (Ruhr-University Bochum; German Mining Museum Bochum)

Abstract format: Oral

Georesourcescapes are systems where social practices, carrying material and immaterial culture elements, are intertwined with the environment to appropriate mineral deposits as georesources. However, can we identify mechanisms explaining the formation of a georesourcescape?

We address this question by developing a middle-range theory on a well-studied case, the trajectory of Iron Age rock salt mining at Dürrnberg, Austria (6th-1st century BC). In contrast with Hallstatt, the earlier salt mining site in its proximity with a mining tradition already dating to the Late Bronze Age, Dürrnberg's evidence shows a planned endeavour, where salt played an essential role in most spheres of social and economic interactions. There, salt extraction seems to have fuelled unprecedented intensification, mainly through the multiplication of activities and specialisation, making the settlement a regional hub for exchange and crafts.

The perception of Iron Age mining and central locations, thus the current understanding of the Dürrnberg case, is characterised by recurring narratives of social complexity formulated from top-down perspectives (for example, a functional role of local elites). To test, revisit and improve such narratives, we are developing an agent-based simulation model formulated as a Socio-Ecological Systems (ABM-SES). ABM-SES can shift social complexity narratives towards a bottom-up approach by representing explicit micro-level behaviour (individuals and households) and relating these with higher-level dynamics. Furthermore, ABM-SES enables the breakdown of the overarching concepts into heuristically separable parts, both environmental and social, and articulates the uncertainties about social organisation into a formal exploration of hypotheses and scenarios. What micro-level factors, possibly not yet considered in the archaeological research, could be involved in forming the Dürrnberg georesourcescape? In this paper, we present our preliminary answer to this question, a schema representing salt mining as it is entangled with other activities and aspects in transversal domains, such as demography, food economy, and social structure.

8 DECONSTRUCTING CULTURAL ESSENTIALIST NARRATIVES: TRANSLOCALITY AS AN ANALYTICAL TOOL FOR CAPTURING ECLECTIC COMPLEXITY IN ARCHAEOLOGICAL MATERIALS

Abstract author(s): Zhao, Chunrong (Utrecht University)

Abstract format: Oral

Cultural essentialism, as a colonial legacy, often serves as a ground for evolutionary perspectives in archaeological narratives. It reductively assumes the fundamental differences and distinct delimitations between Western culture and non-Western cultures, ignoring and obscuring the complexity within both the essentialized categories of "the West" and "the non-West." In the context of colonialism, cultural essentialism has become a theoretical basis of the Eurocentric evolutionary view of history, elevating Western culture and devaluing non-Western cultures, empha-

sizing that culturally backward non-Western cultures are destined to evolve towards culturally progressive Western culture, thereby exculpating colonialism. However, cultural essentialist narratives with overtones of evolutionary value judgments still persist today. Such persistence of the essentialist narratives highlights the urgency of adopting new conceptual tools, not only to decolonize our mindsets but also to reconstruct a more productive and unbiased theoretical framework for analyzing archaeological materials and re-evaluating social/cultural complexity. This paper aims to challenge traditional evolutionary views of history and cultural essentialist narratives. Meanwhile, it also suggests that the concept of 'translocality' might be a promising analytical tool for us to capture cultural eclecticism, which can be one of the criteria worth adopting for measuring social/cultural complexity in archaeological material cultures. Based on the reflections on transcultural theory and the case study of Vajrapāni's images in Gandhāra archaeological materials, the author argues that the concept of translocality can encourage us to attend to the complexity of cultural exchanges and to resume the subjectivities and agencies of local cultures.

9 A 'LIVING MOUNTAIN' LANDSCAPE - SIMULATING BEHAVIOURS AND ADAPTATIONS TO AN EARLY HOLOCENE MONTANE ENVIRONMENT IN THE CAIRNGORMS, SCOTLAND

Abstract author(s): Butler, Micheál (University College Dublin) - Doughty, Alice (University of Maine) - Kelley, Sam - Warren, Graeme (University College Dublin)

Abstract format: Oral

The ephemerality of hunter-gatherer archaeology is well established, with the means to identify sites and evidence often restricted as a result. This difficulty is compounded by the range of environments which prehistoric hunter-gatherers inhabited and interacted with, meaning that survey work has different potentials and problems in different landscape types. This is especially true for locating hunter-gatherer archaeology in mountain landscapes. A small number of sites have been identified by chance finds and small scale survey work in the Cairngorms, Scotland. Conventional archaeological investigations have been conducted at these sites (see Warren et al, 2018), but further work is needed at a landscape scale in order to identify the extent at which these environments were used during the Mesolithic. Given the challenges of archaeological survey in these landscapes we have developed an innovative and interdisciplinary predictive model of archaeological potential.

The Irish Research Council funded 'Looking Up' project (2022-2023) uses a coupled, GIS predictive modelling and agent-based modelling (ABM) framework which allows us to engage with the dynamic post-glacial environment. Changes in glacial cover and extent established by a new programme of dating and modelling of deglaciation further dictates movement and interaction across these landscapes, simulating these at human time-scales. Furthermore the construction of these coupled predictive ABM models will be used to facilitate the development of recommendations for the management and conservation of these mountain landscapes. This exemplifies well the utility of agent-based models, as not just an explorative tool, but also its place in policy making efforts - much the same as GIS predictive modelling has for the last several decades.

References:

- Warren et al. (2018) ,Little House in the Mountains? A small Mesolithic structure from the Cairngorm Mountains, Scotland. *Journal of Archaeological Science Reports* 18. 936-945.

10 AGENT-BASED SIMULATIONS OF FORAGING BEHAVIOUR IN ARID ECOSYSTEMS: AN EMPIRICAL APPROACH

Abstract author(s): Paliou, Eleftheria (University of Cologne) - Angourakis, Andreas (University of Cologne; Ruhr-Universität Bochum)

Abstract format: Oral

Simulations of hunter-gatherer mobility and behaviour are frequently used in archaeology to shed light onto the subsistence strategies, survival resilience and social development of early human societies. Integral to these models are foraging practices that would have been determined by socio-ecological dynamics. Nonetheless, the archaeological record offers only sparse and indirect evidence of such practices, which makes theory and model building on foraging behaviour particularly challenging for archaeologists. Despite some valuable insights gained from ethnographic research, several aspects of human-environment and human-animal interactions in the context of traditional hunting practices (i.e. hunting on foot, with a bow and arrow as opposed to firearms, and without orientation instruments) are still poorly understood. This paper will discuss how empirical datasets on traditional hunting practices, obtained in the framework of an interdisciplinary and collaborative project that brings together archaeologists and indigenous hunting experts, can support archaeological simulation modelling. The project offers a rare opportunity to capture using geospatial technologies the movements of Ju/'hoansi and Hai//kom San game tracking experts during hunting bouts in arid landscapes in Namibia. During four field seasons, which took place between 2019 and 2022, a variety of georeferenced quantitative data (including movement trajectories, heart rate, caloric expenditure, and wind data), as well as qualitative information on decision-making during hunting were collected. This paper will discuss how these datasets

can be used to support the conceptualisation, calibration and validation of agent-based simulations of hunter-gatherer behaviour in arid ecosystems. More specifically, we develop models that aim to explore the interplay between ecological changes and foraging decisions and test different scenarios of human-animal and human-environment interactions in varying environmental conditions. Our work seeks to examine aspects of environmental sustainability and biodiversity that are relevant to past hunter-gatherer societies, as well as modern populations in our study area.

202 USING EARTHEN ARCHITECTURE AS AN EXCUSE: PRODUCTIVE AND SOCIAL PRACTICES IN PREHISTORIC AND PROTOHISTORIC BUILDING

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Pastor Quiles, María (Universidad de Alicante) - Ruano Posada, Lucía (Universidad Complutense de Madrid) - Sánchez Polo, Alejandra (Universidad de Salamanca) - Mateu Sagués, Marta (Institut Català d'Arqueologia Clàssica) - Péfau, Pierre (Université Toulouse Jean Jaurès)

Session format: Regular session

This session aims to tackle the archaeological detection and study of productive and social activities and practices involved in building processes during prehistoric and protohistoric times. For this we acknowledge the central role of studying earthen architectural remains and structures and all the information they may contain, also about other building components. At the same time, we intend to use earthen architecture as an excuse to explore the whole range of building materials available, such as wood, wattle, grass, stone, etc.

We seek case studies that address the chaîne opératoire of pre- and protohistoric building processes, from obtaining, selecting, preparing, transforming, and producing construction materials (including recipes), to their storage, protection, reuse, transport, and exchange. Also the steps and gestures involved in the construction itself, decoration of the built spaces and structures, use and maintenance. Finally, the abandonment of buildings and related practices can also be part of the discussion.

Multidisciplinary contributions coming from different methodological approaches are welcome, especially those focused on social practices of building activities, from macro to microscopic analyses, like geochemistry, archaeobotany, or archaeometry. We are also looking for presentations from experimental archaeology or ethnoarchaeology, which can provide insight in aspects such as choosing and preparing the space for a new building, on foundation, inauguration or “coronation” practices (a less known part of the building processes that can also leave a material trace, through offerings and additions, and be detected in archaeological contexts).

We seek to bring together diverse research around these topics, from case studies to comparative analyses and synthesis with a wider scope, trying to shed light also on the environmental, material as well as cultural and identity factors behind specific building practices.

This session will be complemented with the Workshop “Unsolved case studies of earthen architectural remains: a workshop to share experiences”.

ABSTRACTS

1 BUILDING A MESOLITHIC HUT: A SOCIAL INTERACTION ANALYSIS OF COORDINATED ENGAGEMENT WITH THE MATERIAL ENVIRONMENT

Abstract author(s): Wilton, Antje (Free University of Berlin) - Hochuli, Kenan (University of Zürich)

Abstract format: Oral

This contribution addresses the interactional and collaborative processes occurring during the construction of a prehistoric building. The project is part of a larger study using space-based multimodal interaction analysis (Hausendorf, Schmitt & Kesselheim 2016) to study the interactional appropriation of past architectural spaces. In interaction analytical work, the structure of architecture and landscape is considered a resource that participants can draw upon in organizing their activities (McIlvenny et al. 2009). However, participants are not entirely free in adapting their activities to the ecology: architecture as well as the structures of natural habitats (Uexküll & Kriszat 1934) make some forms of perception, locomotion and coordination more likely than others, thereby influencing interactions between humans within a material environment. The project is based on audiovisual recordings of the building of a Mesolithic hut (Cziesla 2019) by a group of experts (experimental archaeologists) and laypeople (students and visitors) during a citizen science event at the Freie Universität Berlin. The recordings document three perspectives: the external observer's perspective (static camera), the internal observer's perspective (mobile camera) and the internal participant's perspective (bodycams). This allows for the analysis of all interactional activities that participants employ during the building process, including decision-making (e.g. through visual and haptic exploration of materials accompanying verbal interactions), giving instructions (e.g. by directives and/or gestural means) and coordinating actions (e.g. by

aligning verbal and embodied actions). The analysis reveals the sequential integration of semiotic, interactional, material and spatial resources in the building process, shedding light on the social and communal aspects of such activities as a way of place-making (McFayden 2008). One aim of the project is to explore possibilities for inferring past building practices and space usage through the analysis of present-day interactions. Thus, we seek the interdisciplinary exchange to explore common theoretical ground and to refine our methodology.

2 EARTH MORTAR USE ON EARLY NEOLITHIC DOMESTIC STRUCTURES IN THE IBERIAN PENINSULA: EMPIRICAL CHALLENGES AND EVOLUTIONARY PROSPECTS

Abstract author(s): Gómez-Puche, Magdalena (Universidad de Alicante, I.U.I. Arqueología y Patrimonio Histórico - INAPH) - Polo-Díaz, Ana (Maria Zambrano Fellow at Universidad del País Vasco / Euskal Herriko Unibertsitatea)

Abstract format: Oral

Prehistoric daub remains have attracted increasing attention from scientific community in the last decade. Innovative lines of research have been carried out studying earthen architecture at different analytical scales. Despite this promising rise, many aspects regarding identification, interpretation and conservation of daub fragments still are on its infancy and require specific and standardized protocols for addressing a holistic interpretation of this particular type of archaeological material.

Precisely, the discovery of an Early Neolithic earthen domestic architecture that had remained invisible until recent times, has taken on a new prominence. Debris of hardened earth have provided the first direct evidence houses and other domestic furniture.

In this contribution we aim to characterize the Early Neolithic architecture techniques in the Western Mediterranean basin, with special focus on earth mortar remains. The data sets come from the Early Neolithic sites of El Barranquet (Valencia, Spain), Mas d'Is (Alicante, Spain) and Los Cascajos (Navarra, Spain). These are key sites in the research agenda: first, because they refer to different Early Neolithic ceramic groups (Sillon d'Impressions for Barranquet; Sillon d'Impressions and Cardial for Mas d'Is; Cardial and Epicardial for Los Cascajos) and second, because they represent the oldest Neolithic villages in each one of the regions (Barranquet and Mas d'Is for the Valencian region and Cascajos for the Upper Ebro river valley).

Using a multidisciplinary and multiscale approach, combining micromorphological and macroscopic analysis, we will specifically investigate the building materials and constructive techniques of Early Neolithic houses and we will explore their evolutionary implications in the field of demography and social organization of Early Neolithic farming groups.

3 RONDELS: LABOUR AND DESIGN

Abstract author(s): Dickie, Caitriona (Kiel University)

Abstract format: Oral

The neolithic rondel or circular ditched enclosure building phenomenon spread across central Europe during the fifth millennium BC. The rondels range in size and design complexity but all feature a concentric pattern of single or multiple ring-shaped ditches with a variety of entrance/exit style types, often featuring wooden palisade structures.

Utilising two rondel databases (Ridky et al. 2019, Literski & Nebelsick 2012) and neolithic labour cost calculations (Kerig, 2008) the estimated required hours of labour involved in the construction of 44 of these monumental earth-work features has been calculated. In addition, the caloric input required for these construction projects has been calculated. These calculations contribute to a demographic understanding of neolithic labour forces. Additionally the design elements such as the shape, size, and complexity of the rondels further provide insight into transmission of knowledge with regard to both building practices and likely to the intended function of these features across a wide study area.

4 COB BALLS OF THE BRONZE AGE: A COMBINED STUDY OF THEIR PRODUCTION AND USE IN THE SOUTH-EASTERN IBERIAN PENINSULA

Abstract author(s): Pastor Quiles, María (University of Alicante; Catalan Institute for Classical Archaeology) - Mateu, Marta (Catalan Institute for Classical Archaeology)

Abstract format: Oral

Among the study of earth building techniques in archaeological contexts, the implementation of puddled and/or stacked mud units or modules is quite an invisible one. This contribution presents a multi-approach comparative study of a selection of these remains coming from different settlements dated back to the first centuries of the 2nd millennium BC in the south-eastern area of the Iberian Peninsula. Macrovisual observations reveal differences and similarities between sites in how these building elements were prepared, put in place, and put together with other construction materials. Of different forms and sizes, these cob balls were in some cases made of sediment that con-

tained reused materials, such as bone and ceramic remains. In other instances, these modules were applied on reed panels or were covered with coatings. They would have been used to erect Bronze Age buildings, in walls, roofs, or in non-portable structures that fitted out these spaces. Combining different perspectives of analysis, with micromorphological observations, experimental tests and ethnoarchaeological data, this study aims to deepen our knowledge on the technical and productive aspects of this earthen technique and how it was applied. In addition, it also wants to reflect and raise hypothesis on how this way of building developed among those prehistoric communities.

5 CONSTRUCTIONS IN RAW EARTH IN THE BRONZE AGE NAVETIFORMS IN MALLORCA: NAVETA 1 OF CLOSOS DE CA'N GAIÀ

Abstract author(s): Bergadà, M. Mercè - Carbonell, Joan (SERP. Dept. Història i Arqueologia. Universitat de Barcelona; IAUB. Institut d'Arqueologia de la Universitat de Barcelona) - Mateu, Marta (ICAC. Institut Català d'Arqueologia Clàssica; IAUB. Institut d'Arqueologia de la Universitat de Barcelona) - Servera, Gabriel - Javaloyas, David (ArqueoUIB. Dept. Ciències Històriques i Teoria de les Arts. Universitat de les Illes Balears)

Abstract format: Oral

In this study we present the micromorphological analysis of the stratigraphic sequence of naveta 1 of Closos de Ca'n Gaià (Felanitx, Mallorca). This archaeological site is a settlement whose domestic buildings – the navetiforms- were constructed by a cyclopean technique and arranged in a dispersed manner with similar orientations from S to SE. Naveta 1 is an elongated, U-shaped structure, 16 m long and 7 m wide at the façade, with walls 2 and 3 m thick, while its height does not exceed 1.5 metres.

A sequence of 4 phases has been identified: a) before the construction of the monumental structure (ca. 1700 - 1500 BC); b) phase 1 (ca. 1500 - 1000 BC); c) phase 2 (ca.1000-850 BC) and d) post-abandonment (after ca.850 BC).

The microstratigraphic study carried out covers the entire sequence of the naveta and we can deduce, especially from phases 1 and 2, that these communities used different hand-shaped earth construction techniques in situ, applying two systems: the stacking or overlapping of layers in the form of earth lumps, cob balls, and the wattle and daub. The cob balls are the most dominant in the sequence analysed, probably used as render for the stone floors or simply as floors. Remains of domestic activity are also found, specifically in unit SU9s in phase 2.

The materials used come from the same environment as the site, and it is possible that in the wattle and daub there was a greater selection of clayey material.

Post-depositional processes, such as bioturbation, mainly the biological activity of the soil fauna, have accentuated the degradation of these earth raw materials, which makes their characterisation difficult, as is the case in other archaeological sites from temperate environments.

6 THE BRONZE AGE SETTLEMENT AT BRECCIARA (SERRACAPRIOLA-FOGGIA, ITALY). BUILDING STRATEGIES, TRADITION, REUSE AND RENOVATION

Abstract author(s): Bianchi, Paola Anna Elena (Freelance Archaeologist) - Oione, Domenico - Muntoni, Italo M. (Soprintendenza Archeologia, Belle Arti e Paesaggio per le Province di Barletta-Andria-Trani e Foggia) - Liseno, Maria Grazia (Nostoi s.r.l.) - De Giovanni, Davide - Giuliani, Biagio - Pedico, Luisa - Ruggeri, Daria - Torre, Martina (Freelance Archaeologist)

Abstract format: Oral

Dating back to the Bronze Age, the multi-layered site of Brecciara is an important settlement at the centre of the lower valley of River Fortore, close to the coastal line in Puglia (Southern Italy).

Discovered thanks to preventive archaeology for the construction of the Termoli -Lesina Railway, the site has been the subject of large - scale excavation in 2020-2021.

The abandonment in situ of buildings or structured areas is exceptional due to catastrophic events as fire or sudden obliteration: earthen floors, timber / earthen walls, foundations / load - bearing elements with part of the elevation, internal divisions, and hearths.

Around the middle of the 2nd millennium BC, distinct phases of dwelling, craft activities or areas of domestic activities are observed: different plans and use of building materials, gullies, post- holes, and stone or timber foundation. Raw earthen remains identify the perimeter of the houses.

Remains of walls, such as burnt earthen or raw material, can be associated with internal divisions. Later houses, connected to outdoor areas with furnaces and stone structures, have apsidal plans and well explain the dynamics of reuse of space, building materials and choices in the construction and demolition. Large and articulated overlapping system of fire features are another characteristic of the settlement. Space organization focuses on a large sub-circular fire

platform, with multiple preparation levels, and other related combustion features. A crawl space, made of thousands ceramic fragments, refers to the preparation and levelling layers.

This paper presents preliminary archaeological considerations, aspects of technical and conservation characteristic, composition and gesture and intentionality in building dynamics, about selected example of earthen raw material, timber / daub, stone use (selection, re-use, and stone / features), discarded material as building material (pottery, metals, other materials).

7 INTERACTIONS AND CONTINUITY: CHARACTERISING EARTHEN BUILDING TECHNIQUES OF THE IBERIAN NORTHERN PLATEAU IN A TRANSITIONAL PERIOD (LBA-EIA)

Abstract author(s): Ruano, Lucía (Universidad Complutense de Madrid) - Sánchez Polo, Alejandra (Universidad de Valladolid)

Abstract format: Oral

The transition between the Late Bronze Age (LBA) and the Early Iron Age (EIA) in the Northern Plateau of the Iberian Peninsula (ca. 1100-800 BC) is a period of great change, marked by a shift in the socio-economic structure of the local human groups, promoted by meridional and easter contacts. This process is reflected in the farming practices, as well as the emerge of a renovated ceramic repertoire and new kinds of settlements and building techniques: while LBA sites are characterised by isolated wattle-and-daub huts, EIA villages are dominated by mudbricks buildings. However, this is not a radical change, because for three centuries, villagers experimented with the new building techniques, an idea supported by the presence of both systems in the same settlements, as well as mixed techniques.

Although much has been written about these changes, earthen architecture has been dramatically understudied in this context, which leads to a conceptual confusion that overlooks the socio-economic practices involved in the different construction processes. Through a multidisciplinary study of a selection of earthen remains from several settlements, this contribution aims to characterise the building traditions used in the Northern Plateau during Late Prehistory. Discerning the operational construction chains and their implementation can help us to better understand these social and demographic changes, which seem to indicate a progressive adaptation of local traditions to outside innovations.

8 PRODUCTION, STORAGE AND ABANDONMENT PRACTICES AT LATE BRONZE AGE ERIMI PITHARKA, CYPRUS

Abstract author(s): Recht, Laerke (University of Graz) - Zeman-Wisniewska, Katarzyna (Cardinal Stefan Wyszynski University, Warsaw) - Mazzotta, Lorenzo (University of Salento)

Abstract format: Oral

The Late Bronze Age site of Erimi Pitharka presents a range of architectural practices and strategies related to production, storage and abandonment. While walls have foundations and lower parts made of drystone, structures are created by levelling, shaping or digging into the natural limestone bedrock. In some places, deteriorated mudbrick was used to make a level surface on which to align walls. Elsewhere, subterranean and semi-subterranean installations were carved out of the bedrock - including a range of sizes and shapes, from bathtub-sized features to fully subterranean caves several metres deep and with separate carved chambers. These features appear to be a means of taking advantage of the local environment for production and storage purposes: the bedrock is also carved into as a direct setting for facilities such as pithoi (for which the site also receives its name). Finally, the site was abandoned and almost entirely cleaned out, with mainly heavy and large material culture left behind. Some rooms appear to have doorways deliberately blocked with stones, and the interior filled with deteriorated mudbrick material. We would be particularly interested in discussing with colleagues and comparing these practices to those at other sites, in particular in terms of the strategies employed in relation to the environment, storage and production.

9 EARTHEN REMAINS WITHOUT HABITAT CONTEXT RECOVERED IN IRON AGE SILOS IN COASTAL CATALONIA: AN INTERPRETATIVE CHALLENGE

Abstract author(s): Canela-Gracia, Joan - Belarte-Franco, Maria Carme - Corrales Soberino, Antoni - Mateu, Marta (Catalan Institute of Classical Archaeology) - Pastor Quiles, María (Universitat d'Alacant; Catalan Institute of Classical Archaeology)

Abstract format: Oral

Silos are an underground storage system attested in north-eastern Iberian Peninsula since the Bronze Age to the romanization. They served mostly to storage cereals for several years, and then were abandoned and filled with debris from the habitat located in their vicinity, or reused for other purposes. This storage structures were often arranged in important extensions named silo fields, mostly located in plain areas with sedimentary soft rocks. These areas have

been for long cultivated; as a result, settlement remains have been largely flattened. The inferior part of silos are thus the only remains for most of these sites, for which domestic buildings are rarely preserved. Nevertheless, silos are an important source of information, as they were filled with any sorts of materials: consumption remains, domestic pottery and utensils, building materials, etc. Some of them also served as pits for ritual depots.

The excavation of a group of Early Iron Age silos at Mas Cap de Ferro (Nulles, Tarragona, Spain) archaeological site allowed to recover a set of earthen materials of different kinds and functions: an adobe block, fragments of wattle and daub, floorings or wall finishing (some of them decorated), and several objects of an unknown use. We aim to reconstruct the functions of these materials by comparing them with those recovered in other contemporaneous sites. However, many questions on their use remain unsolved.

10 INVESTIGATING THE SOCIAL ORGANISATION OF NURAGIC COMMUNITIES THROUGH THE ARCHITECTURAL REMAINS: THE CASE OF SOUTH MONTIFERRU AND NORTH CAMPIDANO REGIONS

Abstract author(s): Pisanu, Laura (University of Melbourne)

Abstract format: Oral

Over the Middle Bronze and Early Iron Age (16th – 10th century BC), the human occupation of Sardinia (Italy) is known as having been part of the Nuragic civilization, whose name comes from the nuraghes, which were towers. The abundance of building materials and the use of a dry-stone construction technique enabled Nuragic groups to construct simple towers, complex systems of nuraghes, settlements and collective monumental tombs across the whole Island. All these monuments resulted in the organisation of a specific geographic, social, and cultural milieu whose architectural expression and symbolic value might have been at the basis of the creation of a monument-oriented islands, such as supposed by previous scholarship.

In this scenario, a large number of complex nuraghes and a monumental burial area were built at the southern Montiferru and northern Campidano regions (central-western Sardinia). It is assumed that this phenomenon is related to a hierarchical organisation of groups living around the towers and exploiting local natural resources. However, architectural remains and geographical locations of these ancient buildings, as well as the shared management of construction materials, could suggest hypotheses different from the one based on nuraghes as reflection of authority among individuals belonging to the same group. Hence, using data collected during fieldwork activities and spatial analysis, this paper aims at illustrating social factors and communities' decision-making that might have been behind the buildings of monuments at the above-mentioned regions.

11 FOLLOWING THE PHOENICIANS: THE #BUILDINGINNEWLANDS PROJECT AND THE STUDY OF EARTHEN ARCHITECTURE THROUGH THE MEDITERRANEAN SEA

Abstract author(s): Lorenzon, Marta (University of Helsinki) - Cutillas-Victoria, Benjamín (University of Murcia; NCSR Demokritos)

Abstract format: Oral

Phoenician colonization of the Mediterranean is a complex phenomenon that involved migration, circular economy, and environmental adaptation, which characterized the first half of the 1st millennium BC. Groups of displaced Phoenician communities settled and prospered in the Central Mediterranean and the Atlantic coast, adapting their knowledge and experience to unfamiliar landscapes and resources. In these settlements, earthen architecture buildings and fortifications stand out as one of the most significant archaic Phoenician remains, following vernacular Levantine practices and showing the environmental challenge of thriving in new territories. However, earthen architecture has been traditionally understudied, preventing the analysis of the enormous cultural, economic, and ecological source of information that may shed light on the challenges and opportunities faced by local and migrant communities.

The project "Building in new lands: Sustainable Phoenician architecture and environmental adaptation along the Mediterranean" focuses on analyzing Punic and Phoenicians earthen remains in the Central and Western Mediterranean. Our research aims to study the modes of cultural relationship, identity development, and environmental interaction between the displaced Phoenician communities through the analysis of earthen building materials. Our interdisciplinary methodology combines traditional archaeological techniques and geoarchaeology (e.g. XRF, pXRF, XRD, SEM-EDS, OM, GS, CHN, TG, eDNA, phytoliths, etc.). To conduct this research from a multi-scale perspective, several archaic Phoenician and Punic sites from Tunisia, Italy, Spain, and Portugal have been selected, providing new data about raw material procurement, manufacturing choices, technology, labor organization, and architectural evolution from different Mediterranean scenarios connected by the same link. Our presentation in the sessions will address the objectives and perspectives of the project, as well as present the preliminary data and its archaeological implications.

12

CONSTRUCTION TECHNIQUES AND CULTURAL PATTERNS IN THE EARLY IRON AGE SETTLEMENT OF SANT JAUME D'ALCANAR (CATALONIA)

Abstract author(s): Garcia i Rubert, David (GRAP-University of Barcelona / Institut d'Arqueologia - IAUB) - Mateu, Marta (ICAC; GRAP-University of Barcelona / Institut d'Arqueologia - IAUB) - Saorin, Carme (GRAP-University of Barcelona / Institut d'Arqueologia - IAUB) - Carbonell Pastor, Sonia (University of Alicante; GRAP-University of Barcelona / Institut d'Arqueologia - IAUB)

Abstract format: Oral

This communication presents a comprehensive study of the construction techniques used in the Early Iron Age building of Sant Jaume (Alcanar, Catalonia) (ca. 800-500 BC), a fortified settlement with an unusually pseudo-circular ground plan, stone walls and a foundation system that gives the whole complex robustness. The different rooms that structure the internal space of the building had a first floor or storey (wattle and daub technique), and the roofs, which are currently being studied, may have had a primarily vegetal character.

The building was destroyed by fire, after the inhabitants themselves or the attackers had taken the most valuable objects. This fire caused a destruction and sedimentation that is very characteristic of this site, as well as the preservation of many structural remains that, due to their nature, would not have been preserved otherwise: earthen coatings (some painted), roofs, beams, stored building materials, floors, etc.

The study carried out involved the use of various analytical techniques (stratigraphy, micromorphology, photogrammetry, etc.). We have also presented preliminary results on the chaîne opératoire of architecture: questions relating to the provenance of raw materials and the construction techniques used, as well as their cultural characterisation. The way in which architecture and landscape are conceived is inextricably linked to the traditional knowledge and practices of social groups. We have also defined the cultural significance of the use of certain construction techniques and forms in Sant Jaume, understanding that culture is nothing more than a set of phenomenal features that, like other archaeological objects, reflect the changes that occur in the social and economic spheres of human groups. Whether it is earth, stone, or other raw materials, it is the way in which the materials have been modified and used that shows the persistence or change in the communal activities of a human group.

13

SHAPING THE BUILT ENVIRONMENT OF BRONZE AGE CYPRUS. MULTI-SCALAR ANALYSIS OF TECHNOLOGICAL CHOICES AND SOCIAL PRACTICES IN EARTHEN BUILDING CONSTRUCTION

Abstract author(s): Amadio, Marialucia (Ghent University)

Abstract format: Oral

Current studies of the built environment in Bronze Age Cyprus are largely based on the classification and description of architectural components, building structures and settlement layouts, with little consideration of the complex interplay between space and society. In particular, studies of Late Bronze Age Cypriot architecture (ca. 1700-1100/1050 BC) often focus on the monumental structures of urban settlements as stage backgrounds for socio-political events, paying less attention to the creation of social relations through the activities and interactions that took place during the process of construction. As a result, Late Cypriot monumental architecture is often considered as a product of external influences, underestimating the input of local technological expertise. In this paper, I propose to reassess the architectural evidence of Late Bronze Age Cypriot contexts by analysing new data on earthen building structures of the previous, pre-urban period on the island and to provide new evidence pertaining to social and technological practices associated with building construction activities. I want to demonstrate how technological know-how was progressively established in local communities through the sharing of technical knowledge and ongoing experimentation. The research presented here is based on a multi-scalar analysis of mudbricks and plaster materials collected at the Middle Bronze Age settlement of Erimi (ca.1950-1650 BC) that integrates macro-scale examinations with microscopic applications (i.e., micromorphology, XRF and FTIR). The results suggest that supra-household forms of labour were emerging in construction activities in Middle Bronze Age Cyprus, leading to a progressive specialisation in building techniques. This acquired technological know-how would constitute a premise for the construction of the Late Bronze Age urban centres on the island.

14

FIRE/EARTH/PEOPLE. AN ARCHITECTURAL AND GEOARCHAEOLOGICAL STUDY OF THE MALIA PALACE EARTHEN BUILDING MATERIALS

Abstract author(s): Devolder, Maud (Ghent University) - Lorenzon, Marta (University of Helsinki)

Abstract format: Oral

In Bronze Age Crete the Palace at Malia is a rare example of Minoan architecture where sun-dried mudbricks are preserved on such an extensive scale. This is mainly due to the conflagration events that the building endured throughout its long life. These events 'froze' the earthen walls and their mud coating, thus providing us with a wealth of informa-

tion on Minoan building materials and techniques. In this paper, we want to present the results of our study of the macro- and microscopic features of the Palace mudbrick walls. Macroscopic observation of the individual mudbricks and their bricklaying techniques is combined with geochemical analyses (pXRF, XRD, SEM-EDS and FT-IR) and the petrographic study of mudbrick samples. These indicate a general diachronic consistency in soil procurement and building practices. But they also show strong variability within the processing of the raw materials mixing, the selection of vegetal temper, and the production chain that affects the quality of individual mudbricks and walls forming the early Late Bronze Age Palace. The clustering of such variations in separate architectural units suggests that the late 17th c. BC Palace at Malia was erected by different building teams, with no mass-production of mudbricks to be used indifferently in the various parts of the edifice. Considered against the architectural sequence of the Palace and set in perspective with other masonry types, our multi-scale approach provides meaningful insights regarding the craft-people and labourers who participated to this monumental building project and its compartmentation in separate architectural units.

15 WHERE WAS THE RAW EARTH TRANSFORMED? MICROMORPHOLOGICAL ANALYSIS OF THE FT-1625 STRUCTURE OF THE FORTRESS OF ELS VILARS (ARBECA, SPAIN)

Abstract author(s): Carbonell Roca, Joan (Seminari d'Estudis i Recerques Prehistòriques - SERP, Universitat de Barcelona; Institut d'Arqueologia de la Universitat de Barcelona - IAUB) - Alonso Martínez, Natàlia (GIP, 3DPatrimoni, Departament d'Història, Fac. de Lletres, INDEST, Universitat de Lleida) - Bergadà Zapata, M. Mercè (Seminari d'Estudis i Recerques Prehistòriques - SERP, Universitat de Barcelona)

Abstract format: Oral

This paper shows the results of a micromorphological study carried out in a moat (FT-1625) of the Iron Age at La Fortalesa dels Vilars d'Arbeca (Arbeca, Lleida, Spain). Located in front of the East Gate, during its excavation it was interpreted as a defensive moat. Its stratigraphy showed a succession of brown and grey layers, as well as signs of having contained water.

The micromorphological study allowed us to characterize the stratigraphic sequence, which is made up of debris layers, water circulation levels, and raw earth layers. We have determined six types of microfacies, which have been put in their temporal and stratigraphic context. The results show that the structure was first used to store water, most probably channeling rainwater from inside the site. Later, and in relation to an urban reform of Vilars, the structure was used to process raw earth.

Although much progress has been made in the identification and understanding of earthen buildings and structures, as well as the different steps that make up its chaîne opératoire, there are few archaeological cases of storage and processing raw earth. The FT-1625 moat shows an archaeological case with clear evidence of a space dedicated to the elaboration of raw earth.

With the presentation of this work, we want to improve the understanding of the chaîne opératoire of raw earth during the protohistory, but also to provide information to understand the daily life in the Iron Age.

16 EVOLUTION OF SELF-SUPPORTING VAULTS IN MEDITERRANEAN PROTOHISTORY: A GEOMETRIC AND CONSTRUCTIONAL ANALYSIS OF VAULTS WITHOUT WOOD FORMWORKS

Abstract author(s): Carranza Peco, Luis Miguel (CSIC) - Fortéa Luna, Manuel (Universidad de Extremadura) - Rodríguez González, Esther - Celestino Pérez, Sebastián (CSIC)

Abstract format: Oral

Among the alternatives for covering earthen buildings, some types of domes and vaults are the most economical and simplest in their execution. Of all these, vaults executed without wood formworks were the most deeply rooted in the ancient Near East, with some examples, such as the one at Tell al-Rimah (Iraq), showing the transition from round to square and rectangular plans. This type of vaulting spread throughout the Mediterranean has been attributed to the Byzantine period. However, the Phoenician expansion spread architectural typologies from the Levant as early as the 1st millennium BC. In fact, in the Southwest of the Iberian Peninsula, evidence of vaults has been found as a resource used by the societies of the Early Iron Age, the case of the site of Casas del Turuñuelo (Guareña, Badajoz) is the earliest example. Consequently, here we raise the possibility that, like other elements of material culture and architectural solutions, vaults without shoring reached the far west in the protohistoric period.

This paper invites a re-evaluation of the architectural evidence for the existence of vaults in the protohistory of the Mediterranean. Furthermore, we also warn about the confusion that exists between the process of elaboration, the mechanical characteristics, the geometric study and the constructive complexity of the vaults. It is precisely the combination of the geometry with the materials found in archaeological contexts, mortars and rigging, indicating which solutions would make sense and which should be discarded. From there, the different situations must be studied to see which one is relevant regarding the recovered archaeological remains.

17 **ADOBES, ADOBES AND MORE ADOBES: SOCIAL PROCESSES OF CONSTRUCTION AND DESTRUCTION DURING EIA AT CERRO DE SAN VICENTE (SPAIN)**

Abstract author(s): Sánchez Polo, Alejandra (Universidad de Valladolid) - Padilla-Fernández, Juan Jesús - Blanco-González, Antonio (Universidad de Salamanca)

Abstract format: Oral

Early Iron Age (EIA) (7th-4th centuries cal BC) domestic architecture of northern inland Iberia is well known from its villages, made up mostly of circular adobe structures. The outstanding tells created by centuries of rebuilt houses and the early urbanism revealed by the settlements may be some of the reasons for not paying attention to other aspects of the construction details. So, productive processes involved in the building of houses and the symbolic gestures of their final dismantling are understudied topics.

This contribution is focused on the productive and social organizations involved in the construction and -intentional- destruction of House 1 located in the site of Cerro de San Vicente (Salamanca, Spain). For this purpose, more than 200 adobes extracted from its amortization have been examined macroscopically and archaeometrically. Their production process has been analysed from the clay supply to the composition of the mud recipes and the different sizes of the moulds. The marks or fingerprints left by the producers on the clay still fresh -whether to increase the adhesion between adobes, to distinguish the individual and family identities of the producers, or without motivation-, get us closer to the people that participated in those processes. Other traces inform about the spaces in which these adobes were kneaded and left drying as unique places full of intergenerational and social interaction.

Finally, at the end of its biography, House 1 was burned, dismantled, and filled up with its own mudbricks, but how did that process occur? This last stage in the social life of the adobes will also be re-evaluated to understand the agencies involved in these complex processes.

18 **A PROPOSITION OF MUDBRICK CHAÎNE OPÉRATOIRE AT THE HEUNEURG IN 600 BC**

Abstract author(s): Remise, François (Independent researcher)

Abstract format: Oral

Production time of mudbricks in the antiquity has been so far poorly studied, despite the fact that over thirty Architectural Energetics studies using mudbricks production labour rates have already been carried out. In 2016, for my Master thesis, I made a first attempt to analyse all the labour rates drawn from the literature and I proposed a model to estimate the mudbrick production rate when taking into account the working site conditions.

In this paper, I propose a new model to estimate the total mudbrick production time, logically adding the successive stages times of the mudbrick production process.

Then I use this model to estimate the mudbrick production and installation times of the Heuneurg fortification built around 600 BC in southwestern Germany. I propose a model of organisation the Heuneurg community had to establish for the whole chaîne opératoire, from preparing the mud to installing the mudbricks in the fortification.

19 **BURNING WATTLE-AND-DAUB DWELLINGS TO THE EAST OF CARPATHIANS: A MACRO-ARCHAEOLOGICAL PERSPECTIVE**

Abstract author(s): Grechko, Denys - Diachenko, Aleksandr (Institute of Archaeology, National Academy of Sciences of Ukraine)

Abstract format: Oral

This paper discusses macro-archaeological patterns of burning the prehistoric wattle-and-daub houses to the east of the Eastern Carpathians. The studies dealing with the abandonment of dwellings in this area are mostly focused on the Chalcolithic Cucuteni-Tripolye cultural complex, for which the long-term tradition of deliberate house burning is confirmed by field observations and experimental research. However, construction and abandonment of wattle-and-daub dwellings in other periods remains a generally underrepresented topic, even despite the available evidence (mostly, burnt daub). Therefore, we integrate and systematize data on house burning from the Neolithic, Chalcolithic, Bronze and Iron Age sites in the analyzed region, also addressing a wider spatial framework when it is necessary due to the archaeological ('cultural') taxonomies. Our study questions the similarities and differences in dwelling construction techniques and abandonment practices. Identification of macro-archaeological patterns is considered as an integration of spatio-temporal distribution the high-resolution data, while a capacity to explain these patterns is framed by discontinuity, continuity and change.

THE TRACE OF THE BRICKS FROM CLAY TO THE BURNT: ROMAN CITY OF ROMULA

Abstract author(s): Artene, Ilinca („Ion Creanga“ National College) - Basasteanu, Exter (University of Craiova) - Dinu, Andrei - Badica, Petre (National Institute of Materials Physics) - Batalu, Dan (Politehnica University of Bucharest) - Savulescu, Ionut (University of Bucharest) - Negru, Mircea (University of Craiova; „Spiru Haret“ University) - Bohâlțea-Mihuț, Florica (University of Bucharest)

Abstract format: Oral

The bricks were the most prevalent building material in the Roman provinces from Europe since the 1st century AD. Romans used them in constructing civilian, administrative, religious, or military buildings, infrastructure channels, paved roads, and markets. The Roman Empire became a world of bricks.

The bricks' story started with the identification of the plastic argyle clay. The excavated raw clay was then placed under the weather effects. We modeled it into the bricks that dried in the shadow zones. Finally, the dried bricks were burnt in kilns.

The trace of the bricks made in Romula Roman city was drawn from the clay resources to the unearthed bricks and the burnt bricks. Five kilns discovered in the northern ceramic quarter of Romula were used for bricks burn.

Some XRF, XRD, FTIR, and other investigations were made on all these phases, which provided valuable information about this trace and the material properties (thermic, mechanics, magnetism and so on).

The case of Roman bricks in Romula contains relevant images of all these three phases of technological trace from the raw clay to the mud, burnt bricks, and also the tables and pictures of lab investigations results.

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THE HUMAN CONTRIBUTION IN THE SEDIMENT/SOIL FORMATION AT THE BRAZILIAN GEOGLYPHS OF ACRE

Abstract author(s): López Melón, Sonia - Díez Castillo, Agustín - Gallelo, Gianni (Universitat de València) - Rampanelli, Ivandra (Chapeco Arqueologia)

Abstract format: Oral

Earthen structures were built by ancient populations in very different contexts and chronologies. In the western Brazilian Amazon region, in the state of Acre several earthen structures called “geoglyphs” have been found. The questions involving the use, extension and geographic distribution of these earthen structures are still completely open. Some hypotheses about their function are associated to settlements, ceremonial centres, social power management; or simply for drainage, channels of irrigation or animal farming. The first excavation carried out by our team in the Reserva Extrativista Chico Mendes (RESEX), in the area of Santa Rosa geoglyph (2022) showed that the archaeological materials is limited to some few ceramic shreds, lithic materials and paleo-biological remains. Several sediments/soils samples were collected and geochemical sediment analyses carried out. The chemical elements data obtained were cross-referenced with the archaeological record to better understand the human contribution to the development of the soils/sediments found in the earthen structures. Trace elements concentrations together with major elements such as Ca and P when cross-referenced with the archaeological record show that the geochemical information can potentially become a complementary tool to better understand the human contribution to sediments/soils stratigraphic formation in the studied RESEX geoglyphs.

BUILDING AS TIMEWORK: ADOBE OBJECT BIOGRAPHIES AND THE RECONSTRUCTION OF TEMPORALITY AT THE MOCHICA SITE OF HUACA COLORADA, PERU

Abstract author(s): Morrow, Giles (Vanderbilt University)

Abstract format: Oral

The arid Pacific coastal deserts of Peru preserve a rich history of earthen construction techniques that persist from the Initial Period (ca 5000 BCE) through the Colonial Period, and extends into vibrant contemporary building practices. Within the Moche Period (ca 250-950 CE), monumental adobe brick edifices, known as huacas, remain the largest mud brick structures built across the Americas. Ceremonial activities at these huacas were often oriented towards platforms used to enact various community-building rites. Excavations across the north coast also show that most huacas are the culmination of a palimpsest of renovations – a testament to their enduring importance on the landscape. Renovation phases were decision making processes which both encapsulated previous iterations of a community's sacred spaces and religious activities, and marked time through renewal and re-orientation of ritual practice. This paper focuses upon the architectural history of the Late Moche Period (ca 650-950 BCE) site of Huaca Colorada in the Jequetepeque Valley, where excavations have revealed the repeated use of cylindrical adobe

lined features that acted as sockets for vertical wooden posts. Often over 2m deep, these adobe structures were built between architectural phases to allow for the careful curation and reuse of wooden structural members throughout occupation. Spatial and stratigraphic analyses of these persistent adobe features clarify how changing access patterns within this ceremonial space relates to broader cultural shifts during the terminal phase of Moche influence in the region. This paper approaches the use of these intergenerational adobe post emplacements as not only markers of a regional building technique, but as meaningful acts of persistence that reflect aspects of social memory and shed light on Andean ontologies of temporality, kinship and personhood.

23 BUILDING THE FUTURE FROM THE PAST: THE INTANGIBLE HERITAGE OF TURF

Abstract author(s): Romankiewicz, Tanja (University of Edinburgh, School of History, Classics and Archaeology) - Postma, Daniel (Archaeo Build)

Abstract format: Oral

The Grassroots Hutting project is a fieldwork initiative, organised by Tanja Romankiewicz from the University of Edinburgh, which operates as a co-productive partnership in Perthshire, Scotland. Together with Archaeo Build traditional builders and archaeologists, permaculture and eco-tourism venue Comrie Croft, and public heritage agency Historic Environment Scotland, we have designed two turf-walled structures: a bench as a piece of landscape art and look-out, and a full-scale hut. We built these together with local volunteers and professional practitioners, supported by ecologists, agricultural scientists, and social science researchers.

Our contribution to this workshop session proposes to add turf as a raw earthen material to the debate and discuss the chances and challenges we faced in our projects.

Our aims were to protect the intangible heritage side of building with turf in Scotland, documented from Neolithic to early modern times, and to embed this into positive climate action. By training local communities and professional practitioners through immersive experiences, we not only build structures, but also resilience and new capacities. We hope to have empowered them to become positive multipliers of turf building and turf buildings.

The project is designed as a process of doing, not to produce finished products, and we are not replicating prehistoric buildings, but constructing distinctively modern structures inspired by ancient concepts of circular economies that demonstrate the viability of local, natural, zero-carbon, circular architecture - then and now.

We propose to introduce our project design based on Romankiewicz's research into prehistoric circular architectures and economies, to discuss our progress in turning intangible heritage into tangible structure, and to stimulate debate on how archaeology can provide new ways of constructing the past, presence and future.

220 PLACES OF IMAGINATION: AN APPROACH TO FICTIONAL LANDSCAPES

Session theme: 3. Heritage Narratives and Representations

Session organisers: Martin, Jesus (Universiteit van Amsterdam. Faculty of Humanities. Amsterdam Centre for Ancient Studies and Archaeology - ACASA) - Äikäs, Tiina (Archaeology, Faculty of Humanities. University of Oulu) - Barreiro, David (Institute of Heritage Sciences, Spanish National Research Council)

Session format: Regular session

In places of imagination, fiction and reality overlap. Visitors simultaneously perceive a real and an imaginary world. They are real because they occupy a place and possess material remains. However, they are also imaginary because a visitor is aware of living in a simulated and/or recreated place. These places appear real because they occupy a place and possess material remains. Nevertheless, imaginary because the visitor becomes aware that they represent a simulated and recreated place.

Places of imagination exist worldwide since fiction has always been part of human history. They often take the form of displays in the landscape or architectural constructions. Often such places serve to project real or imagined power, and in so doing, they can stimulate collective imagination. Nevertheless, archaeologists and heritage scientists have considered places of imagination as unimportant, not even deserving of protection or management.

In recent years, the global demand to visit and experience imaginary places has increased, from architectural and urban follies (Parque "El Pasatiempo", Betanzos) to film sets (Lord of the Rings, Harry Potter) and theme parks (Sagolandet Lejre or Paleolítico Vivo, Burgos); from literary routes (Ruta del Quijote or Whitby of Dracula) to "trompe l'oeil" (Romangordo, Cáceres) and even some historicist reconstructions in real places (Makronisos island in Greece).

The session will explore the ontological characteristics of places of imagination, where concepts of authenticity or veracity and their social effects interact. Understanding such places as multifaceted, we welcome approaches from archaeology, heritage studies, and related scientific disciplines with diverse theoretical and methodological perspectives focused on exploring places of imagination to create insights into social landscapes and social life.

1 MYTHICAL GEOGRAPHIES AND ARCHAEOLOGICAL LANDSCAPES: THE CASE OF THE SUNJATA EPIC

Abstract author(s): Canós-Donnay, Sirio (Incipit-CSIC)

Abstract format: Oral

The Sunjata epic narrates the origin of the Mali Empire (13th-16th C) and its hero founder Sunjata Keita. It is performed across the area of the former Empire (from Senegal in the west to Burkina Faso in the east) by specialist bards known as griots or jeli, traditionally attached to noble families. It is a story of sorcerers, secret knowledge, and quests for power, not unlike the King Arthur myth, with which it is almost contemporary. It is also an imagined map of the Empire itself, as in their travels, its heroes and antiheroes trace the outline of the land, its people and rulers, and its sources of power. This map, however, does not correspond to Cartesian space or easily identifiable locations; in fact, most places in the epic do not correspond to known geographical points. As a result, all attempts at integrating the Sunjata epic with archaeological research have been unfruitful so far. In this paper, I propose a different approach, one that considers the dynamic, situated, and politicised nature of the epic as a performance as well as the imagined nature of its landscapes, and proposes ways in which these can be informative to archaeologists.

2 CONTEMPORARY NATURAL „SACRED PLACES“ AND THE INVENTION OF THE PAST

Abstract author(s): Ballmer, Ariane (-)

Abstract format: Oral

So-called natural „sacred places“ are widespread artefacts of contemporary imagination, interpretation and practice. These are largely unaltered natural sites, often in impressive topographical settings, frequently accompanied by anthropogenic markers, on the one hand by archaeological remains such as, for instance, menhirs, but also by pseudoarchaeological remains on the other. These places do not simply serve as sites of commemoration or spectacle but, by definition, are also said to bear transcendental potential. This alleged potential is “evidenced” not only by utilizing technical measurements of energy flows or astronomical references etc., but also legitimized through on site-experiences and, most importantly, through an (invented) temporal continuity. As products of the imaginary, natural „sacred places“ enjoy great popularity with a large, diverse audience. However, the narratives around these places are strongly determined by individuals and groups outside the field. The paper aims to discuss how these places conceptually “work”, i.e., how they are identified, how their meaning is created and maintained, how they are advertised, and which stakeholders are involved. As a matter of fact, archaeology tends to turn away from further engagement due to the matter’s proximity to parascientific and esoteric contexts. By doing so, the author postulates important responsibilities are being missed. Eventually, the question arises about how archaeologists can deal with the challenge.

3 HAMEL’S STORY IN SOUTH KOREA AND THE NETHERLANDS: MUSEUMS’ IMAGINATION OF A FOREIGN LAND

Abstract author(s): Kim, Geonyoung (University of Cambridge; Cambridge Heritage Research Centre)

Abstract format: Oral

A Dutch East India Company ship from Batavia to Japan was shipwrecked in Jeju, near the Korean Peninsula, in 1653. Because of this accident, Hendrick Hamel (1630- 1692) and his colleagues were forced to stay in Joseon (the last dynastic kingdom in the Korean peninsula) until 1666, when they successfully escaped to Japan. Hamel published his journal on his journey in Joseon in 1668. After a short period of popularity, his story was gradually forgotten. In 2002, Hamel’s story revived with enormous popularity thanks to South Koreans’ spotlight on Guus Hiddink, the Dutch football manager who led the South Korean football team in the 2002 FIFA World Cup. Since then, Jeju, Gangjin county and Yeosu city, which were mentioned in Hamel’s journal, actively claimed their association with Hamel. Three Hamel museums were opened in these locations in 2003, 2006 and 2013 to celebrate their newly discovered heritage. In the Netherlands, Gorinchem opened the Hamel House Museum in 2007 in the birthplace of Hamel. Both museums in Gangjin and Gorinchem organised a section imagining the scenery of the foreign land of the 17th century through the presentation of material culture and landscapes. How are the Netherlands and Joseon of the 17th century imagined by the Hamel Museum in Gangjin and Gorinchem? What does the imagined foreign land play a role in making Hamel a part of the local heritage in the Netherlands and South Korea? This paper analyses the visual (re)presentations of Joseon and the Netherlands displayed in the Hamel Museums. The analysis looks at the images, material culture and installations used in the permanent exhibition through visual analysis methods. This paper concludes with how the imagination of foreign land of a relatively distant past is appreciated differently in contemporary Korea and the Netherlands.

4 GNOMES AND TOURISTS IN MINES - EXTRAORDINARY UNDERGROUND AS PLACE FOR HERITAGE TOURISM

Abstract author(s): Äikäs, Tiina (Archaeology, University of Oulu)

Abstract format: Oral

In old mythology as well as in contemporary popular culture, e.g., movies and fantasy books, the underground is seen as a place of supernatural beings. Gnomes and goblins can snatch children, take part in mining activities and act as guardians of the underground treasures. These legends are also used to attract tourists when old mines are turned into heritage sites. In this paper, I use cases of Tytyri and Outokumpu mines in Finland to explore how stories of mythical beings are interwoven into the history of the mine and how they are presented to tourists. In Outokumpu a gnome doll welcomes visitors to the underground parts of the mine and in Tytyri one can read the story of a gnome from a children's book already before the visit. This story is then re-told as a drama in the mine. I ask, what is the role of these mythologies for the heritage sites and how the fictional landscape meets the real. What kind of stories are told and how do they add to experiencing the sites?

5 WALKING IN AN IMAGINARY BUT REAL CITYSCAPE: CHILDREN'S DETECTIVE STORIES IN THE SUBURBAN LAHTI

Abstract author(s): Malinen, Anssi (Lahti City Museums) - Äikäs, Tiina (Archaeology, University of Oulu)

Abstract format: Oral

Lahti is Finland's ninth biggest city. Besides being famous for cross-country skiing and ski jumping, the city has also suffered from a bad reputation as "the Chicago of Finland", known for drugs and violence. The ski jumping towers and old radio masts are the most prominent landmarks also spotted by tourists. But for those familiar with the children's detective stories Henkka & Kivimutka Lahti can be a place of adventures in otherwise peaceful suburbs. The author Kalle Veirto wrote the first Detective agency Henkka & Kivimutka book in 2008 and so far there have been 20 books in the series. The friends Henkka and Kivimutka live in an imaginary Pumpputie street, but otherwise, their surroundings in the suburb of Laune are based on real topography of Lahti. In this paper, we map these places mentioned in the books and explore them on a walking trip with two keen readers of the series. We also do a netnographic survey on how the city of Lahti has or has not utilized the books in tourism. The aim is to demonstrate how a mundane, suburban landscape can be transformed into a touristic experience by imaginary layers and how these experiences bring forth new dimensions in the cityscape.

6 FROM LLANDOUGH TO LOTHLÓRIEN: LEARNING FROM HIGH FANTASY FOR PUBLIC ENGAGEMENT

Abstract author(s): Pageau, Hanna (Cardiff University)

Abstract format: Oral

High Fantasy proves time and time again to be one of the most popular genres of fiction on both page and screen. Its early roots of popularity solidified by Peter Jackson's Lord of the Rings trilogy - which we now see carried over into the show Rings of Power. Alongside other shows like House of the Dragon, Wheel of Time, and Shadow and Bone - worlds full of magic and mystery are enticing and popular with the public, much in the same way historical and archaeological sites are. These sites, fictional and real, are not only tied by the way the public interacts with them - but they often physically use the same spaces. Either modified or not, shows like The Witcher have famously used well known heritage sites for many of their sets. This paper will explore the relationship between High Fantasy and other magical settings, heritage in the extant world, and what the public's interactions with each can do to help each other not only better use the worldbuilding available to them, but also how it can affect how they are viewed in their respective landscapes in real time.

7 FINDING SUMMERISLE: AUTHENTICITY AND SENSORY EXPERIENCES OF THE WICKER MAN (1973) 'PILGRIMAGES'

Abstract author(s): McLean, Hannah (University of Glasgow)

Abstract format: Oral

Among archaeologists, particularly those interested in folk horror and the occult, The Wicker Man (1973) has been a continuing subject of fascination. Even a cursory online search brings up several websites devotedly maintained by film fans, with a particular emphasis on 'pilgrimages' to the filming locations around the southwest of Scotland. This paper will explore not only the contemporary archaeology of The Wicker Man and the traces left behind by its production but furthermore the ways in which such 'pilgrims' undertake tours of these sites.

By conducting research into visitor accounts of the pilgrimages, as well as undertaking a personal tour of the sites, this paper will explore interactions with the fictional landscape of *The Wicker Man* and the search for an ‘authentic’ experience of both the film and the Scottish landscape. This will involve an exploration of the conflict between expectations of a wild, haunted, and isolated island landscape with the reality of ‘Summerisle’ – that is, an amalgamation of Scottish tropes filmed in mainland locations now a stone’s throw from car parks, motorways, and holiday camps, the film’s stone circle constructed with polystyrene props. How do *The Wicker Man* ‘pilgrims’ experience and negotiate these conflicts? Within this context, I will also explore the sensory experiences of the fictional landscape of Summerisle and the relation to the film’s theme of pagan-Christian interactions. Music and soundscapes, the consumption of food and drink, and emotional encounters with the landscape are integral to religious and spiritual experiences, narratives of the Scottish landscape, and the film’s worldbuilding itself. The language used (‘pilgrimage’) and visitors’ behaviours (chipping wood from the titular structure for use as a relic or memento) further constitute a continuation of this spiritual theme, which will be explored in this paper.

8 BACK WHEN RURAL SPAIN BECAME THE FAR WEST: STUDYING THE LANDSCAPE OF THE SPAGHETTI WESTERN AROUND MADRID

Abstract author(s): Martin, Jesus (Universiteit van Amsterdam) - Barreiro, David (Institute of Heritage Sciences, Spanish National Research Council)

Abstract format: Oral

The film industry shapes the collective imaginary in many aspects. For example, regarding places of imagination related to the film industry, geographical stereotypes contribute to modelling the collective imaginary about a specific landscape through the impersonation of places. Since the end of the fifties, the film industry has chosen the Spanish rural landscape to recreate various geographies worldwide.

In 1960, as a political decision to break international isolation, Franco’s administration substantially decreased the costs associated with filming in Spain, fostering the emergence of a new film industry as directors chose rural sites near large cities. The rise of major Hollywood films such as *Spartacus* (Kubrick, 1960) and *55 Days at Peking* (Ray, 1963) led to the development of enormous film sets. As hundreds of Spanish technicians and professional performers gained experience working on such mega-productions, this first wave of Hollywood films influenced the later development of European Westerns and peplum.

As a subgenre, the Spaghetti Western was born at this time. It received its name due to the Italian adaptation of western cinema. However, these productions soon relocated to Spain, which offered better economic conditions and a greater variety of western-themed landscapes.

Indeed, for a large portion of Spanish society, which has watched many Western films, the Wild West is actually Almería (SE Spain). However, other places, like the landscapes close to Madrid, were also relevant. Many authors have conducted significant research to find the specific locations used to film spaghetti western movies. This paper will explore the multiple geographical layers of various spaghetti western film locations in Madrid by capturing the filmic gaze that compares a movie frame with photos taken from the same angle at the same place.

9 ARCHAEOLOGIES OF A FUTURE THAT NEVER HAPPENED (IN FILMS)

Abstract author(s): Almansa-Sanchez, Jaime (INCIPIT-CSIC)

Abstract format: Oral

Archaeology and popular culture are deeply embedded, feeding the archaeological imagination both ways. In the process, the representation of the past is full of presentisms that allow to understand our current selves better. What if we could do that looking into the future?

Humans have imagined the future in very different ways, but always with two main approaches: one, a representation of what we want to be. The other, a usual apocalyptic future that results from our unruly present. We normally assign these works into the category of science fiction, and they truly are, but they offer the possibility of a very interesting analysis.

At TAG 2017 I explored the theoretical possibilities of this idea. Today, in 2023, many fictional works of the 19th and 20th centuries fall into what we could call “fictional pasts”, although they were intended as imaginations of the future. Can an archaeological analysis of these futures that never happened help to understand who we are, what we want to be and, more interestingly for our professional development, how do we think change and time?

This paper will focus on some examples from films that can help to understand our current selves from an archaeological perspective, focusing on the material culture displayed.

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Austvoll, Knut Ivar (University of Oslo) - Burlot, Aurélien - Bengtsson, Boel (University of Gothenburg) - Howle Outlaw, Carolyn (University College Cork)

Session format: Regular session

Recent advances with DNA and isotopes have brought mobility back into archaeological explanation, but little attention has been paid to maritime aspects of these movements. The great prehistoric migrations, or phases of mobility, are far too often represented as large arrows spanning vast seas or rivers with no further explanation of how these groups negotiated large bodies of water. There is also a tendency to view maritime regions as passive targets of migrations and movements.

We believe that this is insufficient when studying various developments along the Atlantic façade, including contacts between agricultural societies and hunter-gatherers in Scandinavia, Bell Beaker complexes in Atlantic Europe, or Bronze Age long-distance trade. With regards to these processes, we argue that maritime interactions must have been at the centre of both social and political organizations.

Therefore, the gap lies in the actual undertaking of these travels. How did people interact and what technological innovations were a prerequisite for travels along the Atlantic façade? How was maritime crossing organized along the Atlantic façade during prehistory, and in which places in the landscape/seascape did these actions take place? Moreover, what boats were used; how were these boats built; how far did people travel; and what social and political organizations were in place to complete such voyages?

The session welcomes papers exploring methodological innovations to discuss maritime mobility, but also theoretical concepts to help us think about maritime connections in European prehistory.

ABSTRACTS

1 BRONZE AGE WAR CANOES, BOATS AND SAILING SHIPS IN SCANDINAVIA 2000-500 BC

Abstract author(s): Artursson, Magnus (Institute of Historical Studies, Gothenburg University) - Bengtsson, Boel (Gothenburg University)

Abstract format: Oral

In view of recent studies on the origin and volumes of copper and tin arriving in Scandinavia during the Bronze Age (c. 1700 – 500 BC) along the European Atlantic façade, probably from sources in Britain during the Early Bronze Age, and from c. 1300/1400 BC, the Iberian peninsula, it is clear that seafaring abilities and marine technologies in Scandinavia enabling such journeys must have been well developed. The trade in tin and copper would have provided the incentive and drive to push boat building technologies towards the construction of larger and more seaworthy plank-built war canoes, boats and ships. In Scandinavia, the evidence of watercrafts is mainly restricted to ship depictions in rock art and on metal objects, and also represented in the construction of stone ship settings used for marking graves. This paper has as one of its main aims to deepen the knowledge concerning the development of more advanced sea craft constructions during the Bronze Age in northern Europe, taking into account both direct and indirect evidence. Also, different methods of possible propulsion of seacrafts, paddling, rowing and sailing, will be discussed.

2 THE INTENTION CRAFT: PADDLES AND PROPULSION IN POST-GLACIAL EUROPE

Abstract author(s): Piper, Stephanie (University of York)

Abstract format: Oral

The role of watercraft in the post-glacial colonisation of the Atlantic façade has been key to debates around how rapidly this occurred, and from where. Globally, the successful habitation of islands by hominins is indisputable, although how this happened is not yet fully understood. The scarcity of archaeologically preserved watercraft from the late Pleistocene and early Holocene in determining technological capabilities is a challenge in this regard.

Research on the global development of seafaring and boat technology primarily focuses on the watercraft, whereas little investigation has been undertaken of paddles themselves. This is despite a clear diversity in the range of shapes and styles on global, regional, and temporal scales.

A paddle is the mechanism by which a person becomes meaningfully connected to the water; it becomes an extension of the body by which to propel oneself. This technology unequivocally demonstrates intentionality, without this the watercraft and its passengers are solely at the whim of the current. Numerous examples exist of decorated archaeological paddles, and many Indigenous peoples have exceptionally complex relationships with these components of the

watercraft that are so integral to their society. As such, paddles provide not only the means to movement, but also in wider social communication and expression of identity that may be traced along the Atlantic façade.

3 ACROSS THE SEAS. REMARKS ON NAVIGATION WITHOUT INSTRUMENTS

Abstract author(s): Weski, Timm (Retired)

Abstract format: Oral

From the distribution of similar artefacts, the occurrence of natural resources like tin ore or the evidence of related DNA and isotopes, it is known that even during Prehistoric and Early Medieval times man was already able to sail long distances across open waters. But how did he know his way without instruments? Archaeological finds of navigational aids are still missing, but by analysing ethnographic and historic sources, even if they were recorded in different areas and periods, certain techniques can be detected which may have already been used in former periods. If one compares Polynesian navigational knowledge with that what is written down in Nordic sagas, one can observe several similarities. For example, apart from the use of sun and stars, there are wave patterns and “Seeorte” as means for steering. Some of them can be observed by eye, others can only be detected by feeling the boat’s movements. All have in common that the navigator has to observe constantly wind, weather, visibility, motion of the boats etc., because it is the combination of all phenomena which enables him to decide about the course to be steered.

4 THY TO LISTA IN 1500 BC: COMPARING DIRECT OPEN WATER CROSSINGS AND COASTAL ROUTES USING AN OCEAN VOYAGE SIMULATION TOOL

Abstract author(s): Bengtsson, Boel (University of Gothenburg) - Austvoll, Knut Ivar (University of Gothenburg; University of Oslo) - Montenegro, Alvaro (Ohio State University) - Ling, Johan - Tomasini, Matteo - Green, Ashely (University of Gothenburg) - Prince, Martyn (University of Southampton; Wolfson Unit) - Lindhé, Cecilia (University of Gothenburg)

Abstract format: Oral

The aim of this paper is to evaluate and compare different sea journeys between Thy in northern Jutland, Denmark, and Lista, southwest Norway, in the Early Bronze Age. Archaeological evidence suggests direct contact between the two areas already in the Late Neolithic but remains intense throughout the Bronze Age. Using vessel performance data based on the 350 BC Hjortspring boat as valid parameters for a Scandinavian Bronze Age (BA) type boat, and present-day (the 1990s onwards) environmental data of winds and currents, we simulate and analyze different sea routes this vessel could safely have taken when traveling between the two regions. This paper will discuss the background for the contacts, and compare navigational considerations for both direct open water crossings and inland/coastal routes, including likely points of departure, weather prediction abilities, navigation in a south-to-north direction across the Skagerrak (over 110 kilometers at its shortest distance) without any navigational instruments, safety aspects, and the impact of waves (on small open boats). The results of the ocean-voyage simulations tool for these sea journeys will be briefly presented and the result discussed and evaluated.

5 UNUSUAL HEATHERS IN WESTERN IRELAND AND BRITAIN INDICATE AN ANCIENT MARITIME TRADE ROUTE FROM THE IBERIAN PENINSULA

Abstract author(s): Scott, Nick (Teach na Tuisceana) - Sheehy Skeffington, Micheline (University of Galway) - Fagúndez Díaz, Jaime (Universidad de A Coruña)

Abstract format: Oral

Five heather species have disjunct ‘Lusitanian’ type distributions in Europe.

They occur as discrete populations along Ireland’s west coast, and two also occur along Britain’s south-west coast. They are found elsewhere only, or principally, in the Iberian Peninsula. None could have survived the last ice age in Ireland or Britain, and migration northwards, leaving 100s of kilometre gaps en route, appears impossible. A genetic study of *Erica mackayana* (Mackay’s Heath) indicates that each of its six Irish populations has been introduced from a different place in north Spain, most probably as packing for smuggled goods, but the largest population, on Roundstone Bog in Connemara, is probably much older. Other heather species may be historical introductions, but not *Daboecia cantabrica* (St Dabeoc’s Heath), now throughout Connemara, while a palynological study suggests that *Erica ciliaris* (Dorset Heath) had arrived at Poole Harbour, south-west Britain, by 3600BP. Eleven other Lusitanian plant species occur in western Ireland including *Arbutus unedo* (Strawberry Tree), probably introduced 4,300 BP by the first copper miners. We present preliminary botanical evidence for an ancient maritime trade route along the Atlantic seaboard which may include a direct crossing due north from Galicia to western Ireland.

6 TRAVELLING BOATS, TRAVELLING IDEAS – EMERGING EVIDENCE FOR PLANK BUILT BOAT TECHNOLOGY IN BRONZE AGE IRELAND

Abstract author(s): Brady, Karl (National Monuments Service; Department of Housing, Local Government & Heritage)

Abstract format: Oral

The publication of the Dover Boat book and related works were landmark publications in relation to our understanding of the development of early watercraft in prehistory and Peter Clark's works continue to inspire archaeologists to this day. While it is generally considered that plank boat technology was confined to Britain in the Bronze Age, evidence is now emerging that knowledge of this method of boat building was more widespread than previously thought. Work carried out by the Underwater Archaeology Unit has revealed that a logboat found off Lee's Island in Lough Corrib, Co. Galway was repaired using the same methods used to build the Dover Boat and other sewn plank boats of the period. The Lee's Island oak built logboat had developed a central longitudinal split for most of the length of its floor, which was stitched back together with yew withies, longitudinal soft wood laths and moss caulking. Other repair features include the use of wooden cleats and transverse timbers to help provide structural strength to the floor of the vessel. The presence of these features clearly illustrates that the sewn plank boat technology which was previously thought to be confined to England and Wales during the Bronze Age had spread further afield. How this technology had spread to the west coast of Ireland by the 14th/13th centuries BC is yet to be confirmed but may indicate direct maritime links between the Western Atlantic Fringes and southern coast of Britain during this period.

7 FIMBULWINTERN ON THE "MARGINAL" ÅLAND ISLANDS – NEW INSIGHTS FROM PALYNOLOGICAL RESEARCH

Abstract author(s): Larsson, Petter Ingolf - Ilves, Kristin (University of Helsinki)

Abstract format: Oral

The Åland Islands, in-between the mainlands of Sweden and Finland, have been long understood as marginal and to a large degree separated from the societal processes that took place during the Iron Age (500 BCE–1050 CE). The islands are reduced to a geographical space, and a cultural outpost at best. Nonetheless, the archaeological record does indicate a considerable growth of population during the Late Iron Age (c. 550–1050 CE), and investigations point towards extensive networks as well as economic affluence of the islands at that time. In addition, recent palynological investigation have now provided new and valuable knowledge on land use and subsistence strategies during the Late Iron Age on Åland. Not only do the pollen signal match the archaeological record and strengthens the interpretation of a sudden growth in population during the Late Iron Age, but the pollen signal also indicate a relatively large scale and fortunate agrarian activities combining both animal husbandry and cultivation of cereals. In other areas, not least in the Mälär-valley of eastern Sweden, there is evidence of demographic changes in relation with the mid-6th to 7th centuries CE Late Antique Little Ice Age. Whether or not the increased population on Åland from the mid-6th century CE is a result of climate refugees from the closest neighbouring areas, our studies show that the subsistence strategy of the suddenly grown Åland population appears to have been more successful compared to mainland regions in this period of climatic challenges. We argue that a mixed economy of animal husbandry, cereal cultivation, maritime resource utilisation, as well as long distance trade provided a flexible economy – with opportunities to alter the economy to meet external circumstances.

8 MOLECULAR ISLAND HISTORIES: DNA FROM LAKES AND SOILS REVEALS DIVERGENT AND CONVERGENT ISLAND HISTORIES AROUND THE SEA OF MOYLE, UK

Abstract author(s): Brown, Antony (Palaeo Lab, University of Southampton) - Fonville, Thierry - Pears, Ben (University of Southampton) - Van Hardenbroek, Maarten (University of Newcastle) - Mackay, Helen (University of Durham) - Henderson, Andrew (University of Newcastle) - Gleeson, Patrick - Plunkett, Gill (Queens University Belfast) - Alsos, Inger (Arctic University of Norway)

Abstract format: Oral

The Sea of Moyle (Sruth na Maoile) project has focussed on the socioecological resilience of island communities around the narrow sea between Scotland and Ireland. Although ownership has changed since 'The Kingdom of the Isles' and the 'Vikings period', the islands are still closely inter-connected, but also have diverged in many ways. These islands provide a unique opportunity to reconstruct cultural and ecological change over long periods of time.

Due in part to the problems and limitations of traditional land use proxies we are using sedimentary ancient DNA (sedaDNA) for both plants and animals. This is the analysis of short DNA fragments archived within sediments. By sequencing these DNA fragments and comparing these to databases of known plant DNA and animal sequences, it is possible to reconstruct long term vegetation patterns and grazing history. In combination with radiocarbon dating, lipi analyses and more traditional palaeoenvironmental techniques such as geochemical, pollen and diatom analysis

we are able to reconstruct past land use changes, such as the creation of meadows, heathlands or crop cultivation. By applying these techniques to island lake sediments and soils we can disentangle how land use has changed over time due to population dynamics and socio-cultural factors.

A key site, Loch Finlaggan, seat of the Lords of the Isles on Islay, reveals a detailed occupation history, with evidence of prehistoric crannogs, medieval and later royal and ecclesiastical occupation and the turbulent post-Medieval agricultural economy. Plant community shifts over time have been sequenced from the sedaDNA records, tracking many of these settlement phases into modern times, where surrounding farmsteads currently lie abandoned. The evidence from Finlaggan and other sites can be compared to other records such as census and historical data to track long term environmental change and the impact of population, culture and economics on these island landscapes.

9 **WOODLAND AT THE EDGE: EARLY TO MID-HOLOCENE WOOD PEAT SEQUENCES AT THE LAGGAN-TORMORE SHETLAND GAS PLANT, SULLOM VOE, SHETLAND**

Abstract author(s): Mighall, Tim (University of Aberdeen) - Timpany, Scott (Archaeology Institute, Orkney College UHI) - Ramsey, Susan (Freelance)

Abstract format: Oral

This presentation summarizes the results of the palaeoenvironmental investigation of three peat horizons containing macrofossil wood remains uncovered during the construction of the Laggan-Tormore Shetland Gas Plant adjacent to the Sullom Voe Terminal, Shetland. Multi-proxy analysis of pollen, non-pollen palynomorphs (NPPS), microscopic charcoal, wood identification and waterlogged plant remains analysis was undertaken taken from multiple locations across the development area to examine early- to mid-Holocene woodland dynamics including human impact given the likelihood of a material Mesolithic presence. Radiocarbon dating of the peat profiles combined with the palaeoenvironmental data indicate that willow-birch carr-woodland formed locally at approximately 6400 cal BC and lasted until around 3395 cal BC when a possible combination of deliberate woodland clearance and increased mire wetness caused its demise. Intense fires are recorded in the microscopic charcoal record during the Mesolithic and Early Neolithic periods accompanied by falls in tree and shrub pollen and increases in disturbance pollen indicators and coprophilous fungi suggestive of anthropogenic activity. Phases of probable human-environmental interaction were also found to positively correspond with archaeological and archaeobotanical evidence for an Early Neolithic settlement at the Hill of Crooksetter dating to 3600-3400 cal BC.

10 **NEOLITHIC POPULATION DYNAMICS BASED ON SPDS AND SITE COUNTS IN THE SCHELDT BASIN (WESTERN BELGIUM AND NORTHERN FRANCE)**

Abstract author(s): Van Maldegem, Elliot - Crombé, Philippe (Ghent University)

Abstract format: Oral

During the Mesolithic hunter-gatherers were faced with a multitude of adversities, which included changing landscapes, climate upheavals and rising sea levels. In the following Neolithic period this only partially stabilized. The first farming communities entering Belgium encountered poor soils and more climatic downturns, which put a limit and strain on the size and the spread of populations.

We studied this in the western half of the Scheldt drainage basin in western Belgium and northern France. The area has been extensively studied during the preceding decades, mainly through developer-led archaeology, which led to the discovery of hundreds of sites, both through intensive prospection campaigns and through excavations. A large number of these sites have been subject to extensive dating efforts. Through the use of summed radiocarbon probability distributions and site counts, the paleo-demographic dynamics can be reconstructed in order to better understand if the first farming communities were able to weather short-term climate events and other difficulties. Both popular methods have proven to be successful in gaining more insight into population dynamics, yet both have their drawbacks. By comparing and contrasting the results, the validity of both models can be tested, together with the impact of site taphonomy and changing building traditions.

Following careful critical selection of the data we fit MCMC- and KDE-models on the summed probability distributions, and utilize raw count and aoristic weighing of the settlement data to form a preliminary model of demographic evolutions within the study area for the Neolithic period and the beginning of the Bronze Age against the background of climate and environmental changes.

WHAT MAKES A SETTLEMENT? COMPARATIVE PERSPECTIVES ON SETTLEMENT STRUCTURES AND PATTERNS FROM NEOLITHIC TO IRON AGE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Wunderlich, Maria (Institute for Pre- and Protohistoric Archaeology, Kiel University) - Tkáč, Peter (Department of Archaeology and Museology, Masaryk University; Department of Vegetation Ecology, Institute of Botany of the Czech Academy of Sciences) - Palmisano, Alessio (Department of Historical Studies, University of Turin)

Session format: Regular session

In the broader context of prehistoric archaeology, settlement archaeology represents one of the most pivotal fields of research. The investigation of settlement structures, patterns and organization has developed into a field in which multiscale approaches are widely applied. Settlement structures, on the intra-site scale, and patterns, on the inter-site scale, are investigated at local, regional and supra-regional levels, with qualitative approaches playing an important role alongside statistical approaches. In this context, perspectives on and approaches to settlement archaeology have constantly changed and reflect the orientation of archaeological research.

Nevertheless, the question remains how to bring together the different levels of inquiry and how to describe and interpret the socio-political dimensions of settlement patterns and organization. The aim of the session is to lead discussions about the linkage of different scales of research, the importance of different methodological approaches, and the significance of theoretical approaches.

Within the session we want to address different questions with a focus on the cultural contexts from the Neolithic to the Iron Age in a comparative perspective:

- How do we perceive settlement structures and patterns and how can we describe and analyze the underlying functional, social, political and economic aspects?
- How can we integrate those aspects into a holistic view on settlement organization and systems?
- Can the analysis of settlement patterns and structures be seen as a tool that allows the study and interpretation of past social structures?
- How can we connect different scales of inquiry and research? Which theoretical frameworks and methodologies seem appropriate?

We invite contributions that focus on the aforementioned topics and which might focus on the different levels of inquiry cited above. We also encourage papers focusing on socio-cultural anthropological perspectives, as well as the theoretical frameworks connected to the study of settlement structures, patterns and organization.

ABSTRACTS

1 BETWEEN DESCRIPTION AND INTERPRETATION. SETTLEMENT PATTERNS STUDIES ON AN EXAMPLE OF CZECH ARCHAEOLOGY

Abstract author(s): Tkáč, Peter (Masaryk University; Institute of Botany of the Czech Academy of Science)

Abstract format: Oral

The study of settlement patterns is one of the established methods of investigating prehistoric societies. It is based on the assumption that the distribution of archaeological sites in the landscape reflects the character of prehistoric societies. Additionally, landscape archaeology brought into discourse concepts of subjective perception and more holistic approaches. But is the potential of these “spatial studies” fully exploited? Aren’t we sometimes using them only as another way of describing the archaeological evidence?

I will address these questions on the example of Czechia, whose archaeological tradition still, to a certain degree, bears the legacy of post-WW2 development. This is mostly manifested in a distant attitude towards theory in general, and in main focus on typology and relative chronology. On the other hand, from the 1990s at the latest, Czech archaeologists were successful in development of detailed methods of non-destructive surveys, intensive studies of micro-regions and creation of large archaeological databases.

My research is based on text analysis of Czech archaeological journal articles and monographs dealing with inter-site spatial relations, ranging from Mesolithic period to High Middle Ages (10 000 BCE - 1250 CE). The greatest attention was devoted to exploring how Czech archaeologists worked with spatiality - did they use it as another tool for description, or as an analytic tool in order to interpret life of the past people? I was also interested in spatial and temporal distribution of these studies: are some regions and periods under-represented or over-represented in comparison to “general” interest of the majority of archaeologists? If so, what is the cause? Is it a different nature of archaeological evidence in different periods, or is it a different school of thought?

This paper aims not only to reflect on our perception of spatial studies, but also to discuss their testimonial potential.

2 **FACTS, THEORIES, MODELS: 50 YEARS OF PERCEPTION OF TRYPILLIA MEGA-SITES**

Abstract author(s): Burdo, Nataliia (Kyiv Domain Archaeological Museum) - Videiko, Mykhailo (Kyiv Borys Grinchenko University)

Abstract format: Oral

The structures of large settlements of the Trypillia culture (about 4200-3300) on the territory of Ukraine became available for perception through archeometric and archaeological research. Their research has continued intermittently since 1971. The last ten years have been international projects with the participation of archaeologists from many European countries. A certain research methodology has been developed, which has found recognition among specialists. Around the results of research and their interpretation of the discussion. Using their example, it is interesting to see exactly how and why we perceive certain information in a certain way and what comes out of it during the reconstruction of various aspects.

It should be noted that the same information is the basis of different models and conclusions, versions that contradict each other and cannot be reconciled. The first group of archaeologists sees in them manifestations of urbanization, the second - the “phenomenal” evolution of agrarian settlements. Within the first group, some propose the theory of “low density urbanism” combining it with idea of seasonal ritual centers. In this example we see the adaptation of facts to the theory. This is a case where additional facts are unlikely to change the position of the interpreters. On the other hand, the position of the second group began to evolve towards the recognition of the process of urbanization. The basis was the discovery of ceramic crafts, confirmation of the simultaneous existence of different parts of the settlement. That is, the appearance of new factual material.

As we can see, the significant impact on the interpretation of the source base is not the increase in the volume and even the quality of information, but the researchers’ theoretical foundations. And in this case, the progress of further research will determine an unbiased approach to the array of information.

3 **WHAT’S IN A SETTLEMENT? ARCHAEOLOGICAL AND ANTHROPOLOGICAL PERSPECTIVES ON SOCIO-POLITICAL ORGANIZATION IN NEOLITHIC SETTLEMENTS**

Abstract author(s): Wunderlich, Maria (Institute of Pre- and Protohistoric Archaeology, University Kiel)

Abstract format: Oral

As a central place of social and political interaction of communities in the past, settlements and settlement structures can be considered of outstanding importance. Settlements are not only a place of everyday interaction and encounter, but also potential places where regional and transregional networks meet. Therefore, an evaluation and understanding of potentially acting social and political entities is essential. These actors have certainly included collective and communal units, such as neighborhoods, as well as more individual units, such as households. On a more structural level, institutional locations such as places of assembly or communal houses are relevant. In this regard, political and social anthropology in particular offers a wealth of data and models of the extent to which social and political units may act in settlements and how these may be materialized.

The paper will therefore trace potential archaeological parameters of social and political actors and structures in the context of the internal organization of settlements, as well as settlement structures within local regional contexts. Using selected case studies of the Neolithic and Chalcolithic phases and with the help of ethnoarchaeological and anthropological data and models, perspectives on social coexistence in settlements will be opened up.

4 **LOOKING OUTDOORS AND BEYOND: SOCIAL PRACTICES, SETTLEMENT SPACES AND COMMUNITY STRUCTURES IN THE GREEK NEOLITHIC**

Abstract author(s): Kalogiropoulou, Evanthia (University of Crete)

Abstract format: Oral

The Neolithic period in Europe is characterised by prominent transformations in social organisation, everyday practices and community lifeways that were expressed in variable settlement arrangements, diverse architecture constructions, and numerous spatial formations. During the last few decades, the increasing volume of data and the application of multiscale scientific approaches in the archaeological discipline stresses the need for the re-assessment of the various social expressions of settlement spaces in both local and intertwined regional scale.

This paper explores the organisation, use, and dynamic involvement of outdoor spaces for the overall formation of the settlement arrangements, focusing on Neolithic communities in Northern Greece, including Macedonia and Thessaly. Although their effect in settlement formations is essential, outdoor spaces remain considerably under-theorised and under-studied. Here, open-air spaces are considered as dynamic agents of community developments, as

arenas of subsistence practices, and multi-task venues to the production of communities, reflecting diverse Neolithic lifeways. The paper attempts a broad synthesis of published and unpublished data and discusses examples of various community practices that define settlement spaces, such as daily or exceptional, domestic or social and collective, subsistence and workshop practices. The paper tackles questions of how communities were organised and how different forms of habitus or different kinds of entanglements shaped Neolithic settlement forms and reproduced spatial patterns. This research is conducted in the framework of BONDS - 'Beyond Oikos: Outdoor spaces, daily life and sociality in Neolithic Greece' Project (Number: 00229), funded by H.F.R.I.

5 „EMPTY SPACES....?“ INVESTIGATING THE LOCATIONS OF EVERYDAY AND SYMBOLIC ACTIVITIES THROUGH A MULTI-LEVEL ANALYSIS

Abstract author(s): Fábrián, Szilvia (Hungarian National Museum) - Marton, Tibor (Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Network) - Czifra, Szabolcs (Hungarian National Museum) - Csippán, Péter (Institute of Archaeological Sciences, Eötvös Loránd University) - Rajna, András (Ferenczy Museum Centre, Szentendre) - Klinga, Flóra (Hungarian National Museum) - Priskin, Anna (Déri Museum, Debrecen) - Daróczi-Szabó, Márta (Budapest History Museum) - Balogh, Árpád (Hungarian National Museum)

Abstract format: Oral

Our research focuses on exploring activity zones and household units within the settlements, investigating the relationships among them, and the role of household units within the community and the settlement's life. One of the aims of our project is to develop a methodology to identify activity zones and household units at Late Copper Age settlements.

In the second half of the 4th millennium BC, decisive social changes took place in the Carpathian Basin. Despite the fact that more than two thousand Late Copper Age sites are known in the region we still lack the necessary knowledge about the internal structure of the settlements, including the absence of traces of buildings, the locations of different activities, and the social organization of human communities that lived there.

Creating a multi-level (SQL) database we examined the archaeological data through explorative statistical methods increasingly widespread in archaeological science (CA, MCA, PCA). With the help of the statistical and spatial analysis of the finds, we carried out a joint quantitative and qualitative analysis of the various find categories. By the different types of classifications and analyses of the records of the created database, we can detect and visualize the finer patterns in the distribution of the archaeological finds that are hidden behind the huge amount of data. To understand the formation of archaeological contexts, it is essential to use theoretical and methodological tools, which reveal the relationship between human behavior and object and material remains.

The data collection and analysis carried out in a uniform manner for each site, compared to the possibilities, provide an opportunity to embed the given settlement structures at the micro-regional and regional levels, and comparing them with each other we can have a chance to describe and interpret the socio-political dimensions of settlement patterns and organization.

6 ANALYSING HOUSES. A DIACHRONIC STUDY OF BRONZE AGE HOUSES IN THE PANNONIAN PLAIN AND ITS POTENTIAL FOR WIDESPREAD ARCHAEOLOGICAL INVESTIGATIONS

Abstract author(s): Wehrheim, Ruben (Freie Universität Berlin)

Abstract format: Oral

The study of houses and their integration into larger archaeological interpretation models is an underestimated and rarely used tool for understanding prehistoric civilizations. Predominantly house constructions, if they even were included, are only used to interpret settlement patterns or the settlements themselves. Furthermore, the intention of building different house types was often brushed aside as related to cultural groups instead of looking at the relationship to other reasons for their development.

In this study, I did use Bronze Age house constructions of the Pannonian Plain, excavated in the last decades, to analyse and show what those houses and their research can tell about such civilizations. To understand their behaviour, I focused on the research questions of how the building types evolved diachronically and why different building types and materials, like clay, wood, stone, or reed, were used. To do so, over 500 buildings have been recorded, with more than 40 attributes each. Those pieces of information, such as building types, measurements, or construction phases, have been statistically collated with each other, general archaeological and geographical information.

This approach led to a high number of reliable information about the genesis of house constructions and their usage as well as the intention of their builders of the chosen materials, positions or sizes, and use of space.

Contrary to what previous research assumed, this investigation brought to light that the analysis of house construction contains not only much information about cultural processes and developments but also shows clearly, that the choice of building types is not necessarily culturally determined.

7 TAVŞANLI HÖYÜK: A LARGE BRONZE AGE TOWN IN INLAND WESTERN ANATOLIA

Abstract author(s): Naiboglu, Nihan (İstanbul Nişantaşı University) - Fidan, Mustafa (Bilecik Şeyh Edebali University)

Abstract format: Oral

Since 2017, we have been carrying out an archaeological survey project in Inland Western Anatolia. The project is characterized by the employment of recent geoarchaeological techniques including remote sensing, GIS, GPR, geoarchaeological corings, as well as radiocarbon dating. The research is concentrated on Bronze Age settlements, with a special focus on the large settlement mound of Tavşanlı Höyük. Indeed, the intensive survey conducted around the mound revealed that the archaeological settlement of Tavşanlı Höyük was covering a much larger area than previously assumed, reaching a size of nearly 45 ha which makes the mound one of the largest settlements of Western Anatolia throughout the Bronze Age. As part of the intensive survey, not only GPR measurements have been performed, but also geoarchaeological corings have been implemented, enabling us to collect charcoal samples for radiocarbon dating. With these samples, it was possible to determine the chronology of Tavşanlı Höyük prior to the excavation. The collected data provides a stratigraphy, beginning at approximately 6000 BC, and reveals that the earliest settlement in the area, namely a Neolithic village, submerged in a swamp in the following periods. However, at the beginning of the Bronze Age in around 3200 BC, a new settlement was built on top of this layer, suggesting that the swamp was drained at that time. Continuous layers from 3200 BC to 1200 BC spanned the whole period of the Bronze Age. Linking the GPR data with radiocarbon dates resulted in a reconstruction of a large mid-3rd millennium BC settlement consisting of housing blocks surprisingly similar to the Aegean insulae from the same period.

To verify our survey results, we started an archaeological excavation at Tavşanlı Höyük. This paper aims to present our results while highlighting the potential of recent technologies for providing knowledge in archaeological research.

8 I EXERCISED AUTHORITY...I ERADICATED THE LANDS: COMPARING PERCEPTIONS OF SOUTHERN BABYLONIA IN NEO-ASSYRIAN AND NEO-BABYLONIAN SOURCES

Abstract author(s): Clark, Shmuel (Digital Pasts Lab, Ariel University) - Gordin, Shai (Department of Archaeology & Land of Israel Studies, Ariel University; Digital Pasts Lab, Ariel University)

Abstract format: Oral

Southern Babylonian, and specifically the urbanscape around the city of Uruk, has played a major role in Mesopotamian history for thousands of years. It is the source of a deep, wide-ranging corpus of everyday texts which deal with all manner of intra- and inter-community connections. These texts form the basis of The Mesopotamian Ancient Place-names Almanac (MAPA) Project, which has published a gazetteer of place-names and related citations from Neo-Babylonian and Achaemenid Uruk. Preliminary analyses of this data has revealed the complex settlement patterns and structures, as they were understood and described by the inhabitants.

Previous to the Neo-Babylonian period, however, this same region was the target of repeated incursions, occupations and invasions by the Neo-Assyrian empire, which was attempting to strengthen their control of the region. These actions were recorded in detail in each relevant king's chronicles, from Tiglath-Pileser II to Sennacherib and Esarhaddon. These chronicles describe the same region, but with a focus on settlement patterns in service of the king in question, to aggrandise his conquests or minimise his defeats.

We propose a close comparison of Uruk, its urbanscape, and the surrounding regions as portrayed by the textual corpus collected in MAPA, and by the Neo-Assyrian Royal Chronicles. By contrasting these two viewpoints to each other, we will obtain a more holistic view of the settlement patterns of Southern Babylonia in the 1st Millennium BCE, which sheds light on the functional, political, and economic changes throughout this period.

9 SETTLEMENTS IN THE FLUID LANDSCAPE OF THE IRON AGE IN NORTHERN GREECE: THE CASE OF NEO RYSIO IN CENTRAL MACEDONIA

Abstract author(s): Plika, Peli - Manoledakis, Manolis - Mentessidou, Eleni (International Hellenic University) - Papadakou, Trisevgeni (International Hellenic University; Aristotle University of Thessaloniki)

Abstract format: Oral

Northern Greece during the transition from prehistoric to historic times presents an interesting landscape of rather self-sufficient and self-contained communities, while at the same time trade networks flourish and the process of colonization from southern Greece begins to unravel. Within this context, the new and still ongoing excavation at 'Trapeza of Neo Rysio-Kardia', near the city of Thessaloniki, offers valuable insights on how these realities were expressed in the built environment of a settlement. Taking into consideration various lines of evidence, such as the location of the settlement, the architecture and the spatial distribution of storage facilities, the local character of crafts - most notably weaving and pottery making - as well as the presence of imports, we discuss the internal structure of the settlement, both physical and social. Moreover, recently published data from other contemporaneous sites in

the area of the Thermaic Gulf serve to place 'Trapeza of Neo Rysio-Kardia' within the wider regional context and to explore the emerging urbanization in the landscape of central Macedonia.

10 WHAT MAKES A SITE UNITARY? THE CASE STUDY OF COMO-SPINA VERDE IN THE IRON AGE

Abstract author(s): Di Maria, Francesca (Sapienza - Università di Roma) - Grassi, Barbara (Soprintendenza Archeologia, Belle Arti e Paesaggio per le province di Como, Lecco, Monza-Brianza, Pavia, Sondrio e Varese - Funzionario archeologico) - Vanzetti, Alessandro (Sapienza - Università di Roma)

Abstract format: Oral

This contribution aims to underline the dynamics that led to the development of the wide settlement of Spina Verde, near present day Como, during the Final Bronze and the Early Iron Age (X-beginning of IV century BC).

Settlement traces occupy a vast area (from the southwestern slopes of the Spina Verde height to the plateau of the municipality of San Fermo della Battaglia). In the period of its first maximum expansion, the settled area reached 60 ha, and later expanded to 150 ha: it is commonly defined as a proto-urban centre. The evidence is anyway not continuous, due to the research history and to the impact of modern constructions.

Based on archaeological data, how can we judge whether this area is occupied by a single political unit or by multiple realities that are extremely close to each other?

Through the study of the structural evidence that characterizes the mentioned landscape (e.g. dwellings, terraces, channels for water management, roads) along with the study of the structures' orientation, it can be possible to define some characteristics that are coherent with a unitary site.

The interpretation of the different entities as a wide and single site is rooted in a comparative study and a multidisciplinary approach: both archaeological and ethnographic comparisons have been used. This procedure has helped to generate an archaeological map of the settlement of Spina Verde, Como, starting from the systematic review of the excavation reports and bibliographic sources, with the contribution of lidar surveys and geophysical prospections, in OA GIS environment (Qgis). The coherence of data has in this way been critically validated.

11 MOUNTAINS, DALES, ESTUARIES AND WETLANDS: LIVING ACROSS THE NEOLITHIC LANDSCAPES OF CUMBRIA AND NORTH LANCASHIRE

Abstract author(s): Evans, Helen - Dickson, Antony - Brown, Fraser (Oxford Archaeology)

Abstract format: Oral

People live and work across local and wider landscapes at different scales, coming together and separating in different times and places, sometimes for local and everyday tasks, and sometimes journeying to gatherings in significant locations.

Based on what we've learned from digging Neolithic (and Mesolithic) archaeology on the east side of the Irish Sea, we explore a region less-visited by academics. Whilst the northern English counties of Cumbria and Lancashire are well-known for Neolithic stone axe quarries and stone circles in the Lakeland fells, the occupation record is poorly understood. Recent large scale excavations on major infrastructure projects have revealed lowland landscapes sealed by peat, allowing analysis and interpretation of the social scales of landscape exploitation. Sites range from small campfires and tree-throws along the wetland edge to aggregation sites on confluences and islands, some marked by structured deposition and others by large-scale monuments. Lithic analysis tells of the exploitation of local raw material sources within small valley systems and wider exchange networks stretching along and across the Irish Seaboard.

The uplands, river valleys and estuaries of Cumbria and Lancashire provided the main arteries of seasonal and social life. If we are to generate a holistic view of how people organised themselves at the different social scales indicated by our sites, material culture and ecofacts, the basic unit of analysis should be the landscape itself. We need to zoom into the micro-topographies and environments of the wetland edge, take a close look at the settings and scales of monuments, then zoom back out to drainage patterns and their relationship with the wider world. Tacking back and forth between these scales of analysis has many challenges. However, multi-skilled project teams and digital technologies allow for the fine-grained analyses and wider collaborations that make this approach both possible and successful.

12

RECONSTRUCTION OF THE KUYAVIAN SETTLEMENT NETWORK IN THE SECOND HALF OF V MILLENNIUM CAL. BC

Abstract author(s): Zon, Filip - Jakubczak, Michal (Institute of Archaeology and Ethnology, Polish Academy of Sciences) - Czerniak, Lech (Institute of Archaeology and Ethnology, University of Gdansk) - Leloch, Michal (Institute of Archeology, University of Warsaw) - Woreta, Jakub (Institute of Archaeology and Ethnology, Polish Academy of Sciences) - Pisz, Michal (University of Bradford)

Abstract format: Oral

Settlements of the Brześć Kujawski culture (4350 – 4000 cal. BC) are very characteristic due to the way of buildings construction. These are the long houses, with their characteristic trapezoidal shape of foundation trenches and the orientation on the NW-SE axis. Thanks to this, it is possible to easily identify them on aerial photographs. In 2020, we started a project aimed at reconstructing and analysing the settlement network of the central part of the Kujavia region. The total area of research can be estimated at about 300 km². The reason for choosing this area is the diversity of environmental conditions that allow for testing the remote sensing methodology on almost all types of landscape.

It is clear that there is much more than just a utilitarian function behind the large BKC settlements. For example strong ritual significance is confirmed by the location of burials within them. There is also a correlation between the number of graves and the rank of the settlement. Burials occurred both: inside and outside the houses, as well as in the foundation trenches.

During the research, we used various types of remote sensing methods (aerial photos from a drone, an airplane, satellites and LiDAR data), but also geophysical surveys and classic fieldwalking. We also built a predictive model based on the results of our work and archival data.

We want to present the settlement model we have created, but also consider how the information obtained during non-invasive research (micro and macro scale) allows us to extend our interpretation of past social structures.

13

TOWARDS IDENTIFYING A SETTLEMENTS PATTERN IN THE SOUTHEASTERN ENEOLITHIC BLOCK FROM NORTHERN BALKANS

Abstract author(s): Lazar, Catalin Alexandru (ArchaeoScience#RO, ICUB, University of Bucharest) - Stal, Cornelis (HoGent) - Ignat, Theodor (Museum of Bucharest) - Covătaru, Cristina (ArchaeoScience#RO, ICUB, University of Bucharest)

Abstract format: Oral

Southeastern Eneolithic Block (SEB) represent a series of ceramic styles produced by some human groups related to the second migration wave of farmers from Southwestern Anatolia, denominated by archaeologist as “culture” despite their limitative character to reflect the human group’s evolution and development. The SEB communities cover the 5th millennium BC in the Northern Balkans area (SE Romania and NE Bulgaria) and comprise the Hamangia, Boian-Polyanitsa-Karanovo V and Kodjadermen-Gumelnita-Karanovo VI “culture”. The tell-type settlements in the northern part of the Balkans emerged in the Eneolithic (aka Chalcolithic or Copper Age). This transformation of settlement type reflects a sedentary population and demographic growth, along with some techno-economic progress and the rise of the elites, as proven Varna I cemetery.

The current paper explores the tell settlements created by the SEB human groups in terms of location, size, structure, buildings distribution and organization patterns. Following the available data, it becomes evident that the way of organizing the internal habitation area varies from one settlement to another, but specific patterns can be identified. For this analysis, we focus on a comparative study between previously investigated tell settlements from the targeted time period and study area. Our research is supported by GIS.

This work was supported by two grants of the Romanian Ministry of Research, Innovation, and Digitisation and CNCS - UEFISCDI, project number PN-III-P4-ID-PCE-2020-2369, and contract number 41PFE/30.12.2021, within PNCDI III.

14

REVALUATING THE LATE CHALCOLITHIC AND EARLY BRONZE AGE SETTLEMENT PATTERN IN THE ANATOLIAN CENTRAL BLACK SEA REGION (5TH-3RD MILLENNIUM B.C.)

Abstract author(s): Valsecchi Gillmeister, Margherita (Freie Universität Berlin)

Abstract format: Oral

The interpretation of the archaeological landscape of the Anatolian Central Black Sea region between the late 5th and the 3rd millennium B.C. mainly relies on the finds from a few excavated sites on the Black Sea coast and the information from North Central Anatolia. Yet very little data is available for this area. The site of Oymaağaç Höyük (Vezirköprü, Samsun), with its long-term multidisciplinary investigation, offers the starting point for a reevaluation of

the settlement pattern of this region at the crossroad between the coast and the inland. The cross-check of the Late Chalcolithic and Early Bronze Age surface pottery record against the subsurface evidence at an intra-site level is fundamental for a critical evaluation of the part played by Oymaağaç in the local geographical and cultural landscape. The results gained will be combined with the dataset already available for the Central Black Sea region, leading to the reassessment of the settlement system of this region and its role in the late 5th and 3rd millennium B.C. archaeological landscape.

15 “MEGA-FORTS” AND SETTLEMENT PATTERNS IN THE LATE BRONZE AGE OF THE SOUTHERN GREAT PANNONIAN PLAIN

Abstract author(s): Priskin, Annamaria - Szeverényi, Vajk (Deri Múzeum) - Czúkor, Péter (Móra Ferenc Múzeum)

Abstract format: Oral

Recent research has shown that the southern part of the Great Pannonian Plain is characterized by the emergence of a series of smaller and larger fortified settlements during the Late Bronze Age, ca. 1350-1100 BC. The size and character of these sites seem to vary considerably throughout the region concerned, with settlement sizes ranging from 1700 hectares to 1, and fortifications ranging from a simple single ditch to a system of multiple ditches and ramparts enclosing huge areas. The “function” of these sites is often controversial. Since 2020, we have been working on a project studying such sites and the settlement patterns in their “hinterlands” in southeastern Hungary. The aim of our paper is to present the preliminary results of our project, and – from that starting point – to re-investigate the varied character and possible “function(s)” of such mega-forts in Hungary, Romania, and Serbia. We investigate their internal layout, observed and excavated features and structures, and their relationship to other fortified and non-fortified sites and to other mega-forts. We compare opinions identifying them either as defensive structures and special places of collective rituals. We suggest that beyond the possible defensive function of the central enclosures of these sites, much evidence suggests that the area provided space for various ritual activities identifiable through structured depositions and that the role of the enclosures was at least partly the invention of tradition through monumentality.

16 MONUMENTAL SETTLEMENTS: A SPATIAL APPROACH TO THE SOCIAL AGENCY OF THE DEFENSIVE STRUCTURES IN THE BAROÑA HILLFORT (A CORUÑA, SPAIN)

Abstract author(s): González Camino, Rodrigo - González Álvarez, David (Incipit - Institute of Heritage Sciences)

Abstract format: Oral

The Iron Age hillforts of NW Iberia are excellent study cases for exploring the acculturation of landscapes through the monumentalization of settlements. These sites are the unique format of settlement recognised so far in the region, and they are abundant throughout the territory. The prominence of fortified settlements contrasts with the absence of warfare evidence in the archaeological record, prompting the debate about the social role of their ‘defensive’ constructions. This paper presents the research developed in the Baroña hillfort (Porto do Son, A Coruña, Spain), where we applied digital methods and spatial analysis. These methods aimed to explore the experiential effects of the ‘defensive’ structures of the site in the way its inhabitants or visitors perceived the Iron Age village while moving around it, walking through its inner spaces or contemplating it from the distance. We argue that the structural patterns of Iron Age settlements respond to a social staging established in a dwelling tradition, in addition to any possible defensive or productive planning. Therefore, we suggest defensive structures within this region might be interpreted as active devices bounding Iron Age communities to their land.

17 THE SPATIAL SCALE OF ANALYSIS MATTERS: AN EXAMPLE FROM PRE-ROMAN ETRURIA

Abstract author(s): Palmisano, Alessio (University of Turin)

Abstract format: Oral

In this paper, I adopt a long-established method known as rank-size analysis to detect particular settlement patterns in pre-Roman Etruria in the first millennium BC. Archaeologists must be particularly careful when applying rank-size analysis to a given study area as the results can change according to a specific spatial scale of analysis. With this premise in mind, in this work, I firstly show the results produced by performing rank-size analysis on Etruria as a whole during the Iron Age/Orientalizing (ca. 1,020/1,000–580 BC), Archaic (ca. 580–480 BC) and Post-Archaic (ca. 480–350 BC) periods.

Secondly, I break down each study area into XTENT model-defined territories to investigate how settlement size distributions changed at a local scale. The results show that at a larger regional scale, pre-Roman Etruria is characterized by fragmented political landscapes of competing independent polities loosely integrated. By contrast, at a smaller local scale of analysis, settlement systems appear more nucleated in those large centres dominating their surrounding rural hinterlands by exerting a strong political and economic centralisation.

Finally, this paper demonstrates the advantage of using rank-size analysis at different spatial scales to detect regional variation in landscape organisation within the predicted territorial boundaries of the major urban centres and the more transitory centres, as well as the buffer zones in between.

18 WANDERING FARMSTEADS OR A SETTLED SETTLEMENT? IRON AGE OCCUPATION AND SOCIO-CULTURAL STRUCTURE IN THE SOUTHERN PART OF THE NETHERLANDS

Abstract author(s): Jansen, Richard (Faculty of Archaeology Leiden University)

Abstract format: Oral

Large-scale settlement archaeology is a characteristic and pivotal research area in Dutch archaeology. Since the introduction of Malta-legislation dozens of Iron Age settlements have been extensively excavated, especially in the southern Netherlands. This gives ample opportunities for investigating settlement structures and patterns at a local, regional and supra-regional level as well as intra-site and inter-site comparisons.

The dominant theories concerning these settlements assume a dynamic settlement structure in which farmhouses are abandoned after one generation and rebuilt at some distance. This has led to a model of farmsteads 'wandering' around a monumental and fixed cemetery, the so-called wandering farmsteads-model.

This model is however based on a out-dated dataset. A comparative inquiry of the present dataset leads to a new perspective towards settlement structure and pattern including their placement in the landscape. A comparison of different sites within a region and of different regions suggests a much less dynamic system consisting of settled settlements that have been in a specific place in the landscape for generations together with cemeteries and fields. This new perspectives not only changes our idea about the socio-cultural/-political structure of Iron Age societies but also our approaches to settlement archaeology in practice.

In this contribution I want, based on the unique dataset of extensively excavated Iron Age settlement in southern Netherlands, to address the questions: how do we perceive settlement structures and patterns and how can we describe and analyse the underlying functional, social, political and economic aspects and can the analysis of settlement patterns and structures be seen as a tool that allows the study and interpretation of past social structures?

234 ARTEFACTS' RESIDUE ANALYSES AS A TOOL FOR DECODING PAST DAILY LIFE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Tsiritsi, Kyriaki (The Cyprus Institute - STARC) - Tsafou, Evgenia (Université Catholique de Louvain Collège Erasme)

Session format: Regular session

The present session aims to address topics related to the residue analyses conducted in archaeological sites, dated to the 2nd and 1st millennium BCE, located in the southern Europe and the eastern Mediterranean. Residue analysis, including lipids, proteins, starches as well as phytoliths, have the potential to provide insights not only about past diet, food preparation and consumption, vessel's functionality, but also to unfold subsistence practices, economical, and sociopolitical developments, and shifts. This session will underline the significance of such analyses for the better understanding of archaeological artefacts, contexts, structures, sites, and the socioeconomical developments of the related societies. Furthermore, this session aims to highlight the need for cohesion and consistency on the methodological strategies applied. Given that there are specific protocols for various types of residue analysis, from the sampling in the field, the sampling of the artefacts to the lab work processing, this session will invite the attendees to exchange ideas, through the presentation of case studies, about the need of the integration of different techniques of analyses, which will allow the sustainability of sampling strategies in a holistic way.

ABSTRACTS

1 GC-HRMS OF FRESH AND AGED DI- AND TRI-TERPENIC RESINS

Abstract author(s): Germinario, Giulia - Babbi, Andrea (CNR-ISPC) - De Benedetto, Giuseppe (Laboratorio di Spettrometria di Massa Analitica e Isotopica, Università del Salento, Dipartimento di Beni Culturali)

Abstract format: Oral

Natural resins are organic materials that have been used as environmental fragrances, water repellents, adhesives, sealants, or paints, and in ancient Egypt for mummification. Their chemical characterization in archaeological finds can provide important information on craft techniques, daily activities, and trade. The composition of natural resins is complex and not known in detail, and it changes considerably with age due to polymerization and oxidation processes. In this work, six triterpenoid (myrrh, frankincense, benzoin, aloe, dammar, and mastic) and five diterpenoid (colophony, burgundy, copal, elemi, and sandarac) resins were selected. The resins were subjected to natural and artificial

aging and analyzed with GC-HRMS before and after aging. In addition, some sherd samples from Bisenzio (Capodimonte, VT - Italy), a settlement that flourished between the 9th and 5th centuries BC, were subjected to total lipid extraction. All resins analyzed showed a different profile between fresh and aged samples. Some results are reported as an example: the resins of conifers show the same stable biomarker, dehydroabietic acid, which increases with aging together with 7-oxo-dehydroabietic acid, abieta-8,11,13-triene, and abieta-8,11,13-trien-3-one. Thank to HR-MS it was possible to detect and identify different degradation products. Conversely, abietic acid is most abundant in fresh colophony resin and tends to disappear with aging. Six compounds with labdane and pimarane skeletons were identified in sandarac resin. Diterpenoids with conjugated double bonds in the side chain, such as communic acid, are known to polymerize to a cross-linked structure, so their decrease with aging and more with artificial aging than natural has been observed. The samples from the archaeological site of Bisenzio show di- and mono-acylglycerols, fatty acids, cholesterol, and its degradation products. Moreover, dehydroabietic acid, isopimaric acid, pimaric acid, sandaracopimaric acid, and communic acid, and their relative degradation compounds suggest the presence of Pinus and Cupressaceae resins.

2 INSIGHTS INTO CERAMIC USE IN PROTOHISTORIC NORTHEAST BELGIUM OBTAINED FROM RESIDUE ANALYSIS OF THE CERAMIC MATRIX

Abstract author(s): Heller, Frederic (AWaP) - Garnier, Nicolas (Laboratoire Nicolas Garnier)

Abstract format: Oral

Interest in paleo-diets has grown in parallel with the development of technologies and analytical tools that have now made it possible to identify organic residues more precisely.

In this paper, we present the first analytical results of a first batch of eight potsherds recovered from the Late Bronze/Early Iron Age site (Hallstatt B-C-D) of Linsmeau in Belgium. The study of pottery for this period has traditionally served to define cultural groups and to provide dates, the function of pots was deduced from their shape and sometimes from cooking caramels preserved inside.

New methods such as lipodomics and metabolomics are now available to extract a wider range of information from these same vases without having to rely on visual clues, but they also have to be planned for upstream. These new methods and instruments were used in our case. After a thorough dry cleaning, twin samples of powdered pottery wall were taken from each fragment using a clean dentist drill and sealed in aluminum foil. In the laboratory a first extraction and analysis of the extract by gas chromatography coupled with high resolution mass spectrometry (GC-HRMS) was performed, thus allowing the identification of soluble markers, then a second acid-catalyzed extraction of the residue already extracted was done, the analysis of this extract by GC-HRMS gave access to the insoluble and/or polymerized markers.

The analyses of organic residues from Linsmeau's 'La Closiere' abundant pottery will provide insight into food, culinary and funerary practices encompassing a period between the Late Bronze Age and the end of the Early Iron Age. Sadly, this method of research remains rarely explored, a gap that this study attempts to begin to address.

3 CHEMICAL MARKERS AND THE FUNCTION OF DOLIA IN THE ROMAN FOUNDRY OF VALDERREPISA (CIUDAD REAL, SPAIN)

Abstract author(s): Pina Buron, Maria Rosa - Zarzalejos Prieto, Mar (Universidad Nacional de Educacion a Distancia) - Oliveira, César (Universidade de Evora)

Abstract format: Oral

The aim of this work is to discuss the results of chemical analysis of residues conducted by means of Gas chromatography-mass spectrometry (GC-MS) in an assemblage of roman dolia coming from the site of Valderrepisa (Ciudad Real, Spain). The site, excavated between 1990 and 1991, holds an ancient foundry dating back to the Late Republican period (II-I centuries B.C.) and related to the mining exploitation of silver and plumb of Sierra Morena at its time of highest activity. The interest of this case study is that the pottery containers were found in their primary context of use inside a storage room, thus providing major evidence about diet and subsistence practices of the foundry workers, who might have been of Italian origin, at least in part. A variety of chemical markers retrieved from the pottery samples analysed points out to vegetable oil as the only content of the whole assemblage. A dataset we will confront with literary sources to ascertain the function of these vessels in the site.

4 THE APPLICATION OF THE ORGANIC RESIDUE ANALYSES ON THE STUDY OF MINOAN CERAMIC VESSELS FROM THE 2ND MILLENIUM BCE CRETE

Abstract author(s): TSAFOU, EVGENIA (Université Catholique de Louvain)

Abstract format: Oral

This paper discusses the application of the organic residue analyses on ceramic cooking vessels dated in the Middle and Late Bronze age (1750-1200 BC) which are coming from two neighbouring Minoan settlements of the island of Crete in the Aegean. The organic residue analyses programme was part of a holistic approach and an interdisciplinary methodology adopted on the examination of the function and use of different shapes and types of domestic vessels related to food preparation, which was aiming to understand better the Minoan culinary practices.

The implementation of the programme contained two different techniques of analysis, the microbotanical and the molecular analysis, and different kinds of shapes and types of utilitarian vessels, which enabled the study to detect a large range of organic substances used in the ceramic vessels. Through this paper, the results obtained from the two methods of analysis and the new information added in the function and use of the cooking vessels, as well as in the Minoan cooking practices, will be pinpointed. Furthermore, the methodological strategy followed in the implementation of two different techniques of analyses and the methodological challenges will also be discussed.

5 STARCH GRANULE ANALYSIS UNDER DISCUSSION: THE CASE OF 2ND MILLENNIUM BCE CYPRUS

Abstract author(s): Tsirtsis, Kyriaki - Margaritis, Evi (The Cyprus Institute - STARC)

Abstract format: Oral

Archaeobotanical studies in the Eastern Mediterranean have shown that the integrated analysis of macro botanical remains and starch granules from food-related artefacts (e.g., pottery used to store, process or consume food) has the potential to result in a better understanding of plant-based food processing and culinary practices; insights that allow a better and holistic reconstruction of the interaction of past humans and plants at regional and interregional level. The present paper aims to address topics related to the starch granule analyses conducted in archaeological sites, dated to the 2nd millennium BCE and located on the island of Cyprus in the Eastern Mediterranean. The starch granule analysis which was conducted on artefacts that derived from various contexts linked to domestic, storage, funerary, and workshop activities aims to provide important information on the significance of starch granule's presence in -not necessarily related to domestic activities- archaeological units but also to open a new discussion on the design of sampling strategies.

236 EARLY MEDIEVAL TOWNS IN EUROPE: BETWEEN LEGACY OF THE ROMAN EMPIRE AND „BARBARIAN“ CULTURE?

Session theme: 6. Contested Pasts & Presents

Session organisers: Lorans, Elisabeth (University of Tours) - Crabtree, Pamela (New-York University) - Lefebvre, Bastien (University of Toulouse)

Session format: Regular session

As a result of excavations that have been conducted throughout Europe during the past 40 to 50 years, urban archaeology has increasingly revealed the transformation of urban space between the 4th and 11th centuries CE. In the territory of the Western Empire where classic Roman towns predominated, archaeologists have observed important changes that took place more or less rapidly, principally during the 4th and 5th centuries CE. They include: the progressive abandonment of construction in stone in favor of building with wood and turf which can be more difficult to interpret, the reuse of construction materials, public spaces and amenities that are poorly maintained or abandoned (such as roads, squares, and aqueducts), the development of episcopal centers or new settlements around certain suburban basilicas, the replacement of habitation or industrial areas with cemeteries, and the adoption of new ways of life that can be difficult to identify in the thick deposits of the "dark earth", etc. Although these issues are well known and have been treated in many publications, comparisons between different countries and regions are needed in order for them to be better understood. The goal of this session will be to compare territories within and outside the Roman Empire from the same period in order to identify their similarities and differences. Identifying these similarities and differences will allow us to distinguish antique survivals from the contributions of Germanic or "barbarian" societies to the development of early medieval towns.

Synthetic contributions, on a regional or national scale, are requested, rather than reports on individual sites. These contributions could focus on general characteristics of urban spaces or on certain aspects of urban organization and

topography (such as roads, houses, cemeteries, etc.) or on the archaeological evidence that can reveal new ways of life.

ABSTRACTS

1 WHAT IS THE NATURE OF URBAN LIFE IN 5TH-8TH CENTURY BRITAIN?--EVIDENCE FROM SOUTH-EAST ENGLAND

Abstract author(s): Crabtree, Pam (New York University)

Abstract format: Oral

The question of the transition from the Roman to the post-Roman world has been of interest to historians for centuries, and archaeology has also played an important role in attempts to answer this question since the middle of the last century. While scholars working on the European continent have made a strong case for some degree of continuity in settlement in post-Roman towns and cities, some scholars working in Britain have argued for a significant decline or disappearance in urban life in the 5th century CE. This presentation will examine both settlement data and zooarchaeological evidence from late Roman towns and cities in southern Britain to examine the extent of urban life in former Roman towns from the 5th through the 8th century. To what extent can we talk about urban life in post-Roman towns in Britain, or do these towns simply survive as features in the early medieval landscape? In addition, what is the relationship between these Roman towns and the establishment of the so-called 'wics' in the 7th and 8th centuries CE?

2 BECOMING URBAN IN THE KINGDOM OF EAST ANGLIA

Abstract author(s): Fathy, Brandon (University of Leicester)

Abstract format: Oral

The question of how towns (re)emerged in the early Middle Ages continues to vex archaeologists. This research has been particularly hindered by a framework which sees towns as stable categories of being, rather than as articulated through a process of becoming. Accordingly, this research critically examines the early history of Ipswich, AD 600-900, in an effort to understand how and when it emerged as a town. To do this, I explore Ipswich in context with neighbouring contemporaneous East Anglian settlements - Brandon (Suffolk), Carlton Colville, Kilverstone, Rendlesham, and West Stow - to identify how early archaeological evidence can begin to detect a new species of settlement (i.e. a town) at Ipswich. For this research, an individual settlement does not belong to the category "town" by a list of common characteristics, but rather by historical processes.

I collated over 50 separate excavation reports around Ipswich and a further six from surrounding settlements and mapped their features and artefacts in a GIS, including quantitative and qualitative data. I examined and contrasted the following four characteristics from each settlement: boundary plots, settlement scale, building clustering, and quantity of imports. Key results included that Ipswich was, as early as the 7th century, distinct from neighbouring sites from a) the presence of smaller enclosures, b) the high frequency of pit/well features per plot, c) later continuity of earlier construction traditions, d) a more extended territory, and, perhaps most interestingly, e) the replacement of roads in favour of "halls" as the spatial focus of construction. Furthermore, f) a higher absolute and relative quantity of imports were deposited in Ipswich than at most sites. I conclude that Ipswich did not begin its life as a village and then grew into a town, but was instead qualitatively different from East Anglian settlements from the start.

3 TRANSFORMATION OF ROMAN CAPITAL CITIES IN GAUL BETWEEN THE 4TH AND THE 10TH CENTURIES: AN OVERVIEW

Abstract author(s): Lorans, Elisabeth (Université de Tours)

Abstract format: Oral

Urban occupations from the 4th to the 10th centuries in the former territories of the Roman Empire, known as "l'entre-deux" following the work of Henri Galinié, remain difficult to understand despite the many archaeological discoveries of the past fifty years. This presentation focuses on France and highlights the major transformations of the urban landscape in the major ancient urban centers of Gaul: what became of civil or religious public buildings; changes in construction practices (the transition from stone to earth and wood, but also the intensive recycling of building materials); a new religious topography based on the pairing of the basilica and the episcopal see, but also funerary rites characterized by a diversity of practices (from individual tombs to vast necropoli associated with a basilica); or even agropastoral or artisanal activities identified during excavation, sometimes connected with dark earth deposits. The objective of this presentation is to evaluate the roles of continuity and change in the transformation of the principal Roman cities in Gaul, privileging a qualitative rather than a quantitative approach.

4 WELCOME TO THE DARK SIDE: DISCLOSING INVISIBLE STAGES OF MEDIEVAL URBANIZATION THROUGH THE INTEGRATED STUDY OF EUROPEAN DARK EARTH

Abstract author(s): Lo Russo, Sarah (Vrije Universiteit Brussel; University of Basel) - Devos, Yannick (Vrije Universiteit Brussel) - Pümpin, Christine - Brönnimann, David - Kübler, Simon (University of Basel) - Nys, Karin (Vrije Universiteit Brussel) - Ismail-Meyer, Kristin (University of Basel)

Abstract format: Oral

Thick, dark-colored homogeneous deposits, also known as Dark Earths, are a common phenomenon in European towns. Their seeming absence of stratigraphy has in the past resulted in a lack of research or their discarding or generalizing interpretations, for instance as abandonment deposits linked to towns' supposed decline. Meanwhile, geoarchaeological research has convincingly demonstrated that they contain highly valuable information impossible to access with traditional methods. For the Early and High Medieval Period, these Dark Earths represent some of the least known aspects of town development.

The WEAVE-project "Welcome to the Dark side" will re-evaluate micromorphological data from numerous case studies, primarily in Belgium and Switzerland, in an integrated study. The main goal of this project is to perform a first, large-scale, integrated Europe-wide synthesis of all results, important themes and major trends of past and current geoarchaeological Dark Earth research on early and high medieval towns. This will complement and challenge past historical-archaeological debates on the emergence and development of towns, and to write a novel, geoarchaeology-informed narrative on this subject. All data are entered into a novel two-pillar database system (GEOARCHrec and GEOARCHive). Thanks to this unique open access system and image reference collection, the project will have a significant and lasting impact on how Dark Earths are studied in the future, preventing further loss of irreplaceable information.

5 WALLS, STREETS, SEWERS, AND AQUEDUCTS. GENERAL TRENDS IN HISPANIA BETWEEN 4TH AND 7TH CENTURIES AD

Abstract author(s): Ruiz-Bueno, Manuel D. (Universidad de Córdoba)

Abstract format: Oral

The Romanization of the Iberian Peninsula led to the foundation of new cities across the territory or the transformation of the previous ones. Regardless of their origin and status, most of the urban centres in Hispania shared some basic infrastructure that include walled enclosures, a network of stone-paved streets with a sewage system and a water supply system where aqueducts had a key role.

This varied infrastructure had a different evolution from the 2nd century AD onwards, but mainly in the period comprised between the 4th and 7th centuries. In those cities that remained inhabited, the continuous maintenance and repair of the walled enclosures contrasts with the progressive abandonment of almost all the aqueducts, and therefore, the proliferation of wells and cisterns. Meanwhile most of the streets were still in use, but with a different appearance due to several changes that include the partial or total occupation of porticoes and roads, the replacement of stone pavements by beaten earth floors over the time and the progressive disuse of most of the sewers.

These general trends are shared with other cities of the former Western Roman Empire and reveal the disappearance of the classical city and the emergence of the late antique town. However, they did not happen at the same time, and even in the Iberian Peninsula there are important differences not only between the cities but also inside the same town. Through this contribution our aim is to provide a broad view of these changes paying special attention to when it happened.

6 TOPOGRAPHY OF POWER AND TOWNS. THE CASE-STUDY OF MILAN AND NORTHERN ITALY BETWEEN LATE ANTIQUITY AND THE EARLY MIDDLE AGES

Abstract author(s): Vassena, Mauro (Università Cattolica del Sacro Cuore - Milano)

Abstract format: Oral

Topography of power is widely recognized as a privileged approach to investigate features and transformations of towns between Late Antiquity and the Early Middle Ages, because it profoundly determined the development of urban settlement fabrics. Analyzing selected data from both written sources and archaeological evidences regarding ecclesiastical and civil seats of power (bishops' palaces, royal and ducal buildings), this presentation aims to describe how Milan and other urban settlements in Northern Italy (especially in Lombardy) developed from roman to early medieval towns. We will be able to notice how the typical architectural language of the authorities in Late Antiquity, well rooted in the Roman past, underwent significant transformations probably following contacts with new forms of monumentality imported from barbarian populations. In particular, we will see how the multicentric extension of the grandiose late antique palaces (often corresponding to entire urban districts) evolved towards much smaller and com-

pact structural forms, and how the implementation of palaces' defensive systems became a main feature of power statement, so that the medieval seats of power were able to establish themselves as the vertices of the townscape.

7 THE DEATH OF ALTINUM (VENICE): SHOULD WE HAVE TO BLAME ATTLA?

Abstract author(s): Paiano, Jacopo (Ca' Foscari University, Venice; Scuola Interateneo di Specializzazione in Beni Archeologici - SISBA)

Abstract format: Oral

Altinum (Venice) was one of the most relevant urban settlements in the north of Italy in the Roman Imperial age, as testified by several historical sources and archaeological findings. The importance of the city and its centrality during the roman era does not harmonize with its complete abandonment at the beginning of the Early Middle Ages. It is also a matter of surprise that almost all the other roman towns in the area show patterns of continuity. In the past, archaeologists and historians paid little attention to the post-classical phases of the city. Local tradition adopted a specific narrative elaborated in later times for political reasons by the Serenissima: the end of the town has to be blamed on the destructions and invasions of different Barbarians. Attila and the Huns as a plague or the Lombards as destroyers: these ideas have also been a well-known leitmotiv in the archaeological literature. This view is not acceptable anymore.

This paper discusses the results of a GIS project that reconstructed the Late Antique and Medieval topography of Altinum, considering published literature and all the excavation data (grey literature) available in the local archives, including the topography of all the findings dating from the 4th century onwards. The data are discussed overlapping the detailed forma urbis discovered by remote sensing.

It appears that the urban landscape and its transformation were much more complex than simple barbarian destruction: archaeological data show early crises (2nd 3rd cent.) and substantial transformation during the Goth period, which should be compared with the urban destructuration patterns already studied in Northern Italy and the Adriatic area.

8 DESTROYED BY THE BARBARIANS OR FOLLOWING THE STREAM: TOWNSCAPE TRANSFORMATIONS IN THE NORTHERN ADRIATIC REGION (4TH-8TH CENTURIES)

Abstract author(s): Bergamo, Martina (Ca' Foscari University of Venice)

Abstract format: Oral

Were the substantial urban changes of the Roman cities in northeastern Italy the results of the warfare after the crisis of the Roman empire or the results of the environmental transformations?

The study of settlement in the northern Adriatic region between the Late Roman and Early Middle Ages received considerable attention during the last 30 years, with new excavations in relevant sites. Although in the territories between Aquileia and Adria the urban system endured, and many Roman towns survived, cities on the coast underwent some radical transformations involving the configuration of spaces and the appearance of new features in building techniques and material culture.

While the importance of road networks slowly diminished in favor of river/channel transportation of people and goods, the connection between the urban centers and their coastal and lagoonal surroundings became crucial as relevant shifts in the environmental configuration challenged their access to the sea. At the same time, many new settlements emerged in strategic locations alongside rivers and lagoons, granting the cities new docking infrastructures and configuring them as polycentric entities. Placed near the main waterways, with guaranteed access to the commercial networks and the production of specific goods, such as salt and fishery, some of them gradually gained relevant status in commercial and demic terms, absorbing some harbor functions, showing great economic vitality, and sometimes attracting new bishoprics.

This paper aims to follow this long process between the 4th and the 8th centuries, with a topographical and comparative approach focusing on fluvial axes flowing from the cities to the lagoons. Shifting to this perspective, it is possible to reconnect the urban and coastal elements, overcoming previous separate viewpoints, and re-narrate the traditional impact that "barbarian" destruction would have had.

9 DO WE LIVE IN CITIES IN THE EARLY MIDDLE AGES: THE DIFFICULT QUESTION OF HOUSE REMAINS

Abstract author(s): Lefebvre, Bastien (Universty of Toulouse Jean Jaurès; French Ministry of Culture)

Abstract format: Oral

In Western Europe, the question of the material reality of cities during the early Middle Ages has been debated for many years. While religious buildings are well documented by both texts and archaeology and funerary discoveries are not lacking, remains that have been interpreted as houses are extremely rare. Must we conclude that no one lived in

cities in the early Middle Ages or, more likely, that the nature and form of these houses left few traces? Several examples excavated in Italy, in France, and in England provide some avenues to explore and a glimpse of the diversity of the types of houses and their manner of construction. Between the antique domus the urban houses of the middle Middle Ages, numerous forms of housing, characterized by substantial regional, chronological, and social heterogeneity are hidden. This communication will address the subject according to three themes: the architecture of the houses, the organization of domestic spaces, and the topography of settlement in the cities.

10 URBAN ARCHAEOLOGY OF LJUBLJANA: THE EMERGENCE OF A MEDIEVAL TOWN ON THE RUINS OF ROMAN EMONA

Abstract author(s): Karo, Špela (Zavod za varstvo kulturne dediščine Slovenije) - Županek, Bernarda (Museum and Galleries of Ljubljana) - Draksler, Matej (Skupina STIK)

Abstract format: Oral

In the 4th and early 5th centuries, the appearance of the Roman colony of Emona changed; the town walls were partially reinforced, some entrances were walled up, and the defensive ditches were dug again, while a large part of the sewage system was no longer maintained. It is believed that the temple on the forum was demolished, and some large public buildings and buildings for Christian rituals were repaired or erected. These changes were closely related to a number of factors, such as the rise of Christianity, civil wars and conflicts, economic crises, and increasing pressure from Germanic peoples beyond the borders. Modest traces of the barbarian presence are found in individual graves and objects scattered throughout the town, as well as in burial grounds on the outskirts. For the period after the middle of the 5th century, there is little evidence of life in the town.

The urbanisation of the town can be traced again from the early 11th century. The excavations carried out in the last three decades in the historical centre of the town have significantly changed our knowledge about the beginnings of the medieval settlement and the early phases of its urban development. The archaeological findings locate the beginnings of the medieval settlement on the right bank of the Ljubljanica River, when the Castle Hill with its wooden fortification surrounded by a defensive ditch became the central control point. At that time, pre-urban settlement began at the foot of the hill, where evidence of a large-scale tannery was found. The oldest remains are wooden buildings and a ditch system derived from the watercourse of the Ljubljanica, which may have served the tanneries. The rise of Ljubljana took place in the 12th century under the Spanheims, when the castle once again became the focal point.

11 "SUFFERING UNSPEAKABLE DISASTERS AND CRUSHED BY POVERTY". CONTINUITY AND CHANGE IN THE EARLY MEDIEVAL PELOPONNESIAN CITIES

Abstract author(s): Simoni, Eleni (University of Patras) - Papagiannopoulos, Konstantinos (Institute of Local History)

Abstract format: Oral

After an "extraordinary flourishing" during the Late Roman period, the Peloponnesian cities enter a period of crisis in several levels of the life, including demographic shrinkage. Systematic work in Corinth, Messene and Sparta shows dramatic transformations of the topography. Despite lacking details in the real extent and the exact typology of the urban settlements, it appears that the cities were reduced in size, while the center of the social life moved to other zones within the walled area and public buildings shifted in use. In cases, individual tombs occupy the position of the agora. The first Christian cemeteries and basilicas appear marking the fusion of the new moral standards. Abandonment in urban space is often assigned to barbarians. However, in Olympia the major destructions are now attributed to an earthquake. By the same cause, many public buildings in Patras were destroyed in the late 3rd century. Then, after a second, historically documented, seismic event in the mid. 6th century, the city gradually shrinks and is confined inside its new-built castle. In this way, it manages to survive the Slavic attacks two centuries later.

We follow the evolution of the urban fabric in the Peloponnesian cities between the 4th and the 12th centuries. Not all cities are equally researched and studied. For example, excavations from Patras are unpublished in total and only preliminary reports are available. We try to overcome the limitations imposed by an imbalanced study of the region with the use of GIS and the employment of fuzzy logic. At the same time, a number of landscape projects that are being conducted in the Peloponnese and other neighboring regions broaden our scope, as they highlight changes in the countryside at the regional level and the resilience that the inhabitants demonstrated opposite multiple internal and external threats.

HOW DO WE BUILD IT? EARLY MEDIAEVAL PROTOURBAN CENTRES OF MORAVIA

Abstract author(s): Prištáková, Michaela (Department of Archaeology and Museology, Faculty of Arts, Masaryk University) - Mazuch, Marian (Institute of Archaeology, Czech Academy of Sciences) - Dresler, Petr (Department of Archaeology and Museology, Faculty of Arts, Masaryk University)

Abstract format: Oral

The second half of the first millennium AD falls within the period between the Frankish and Byzantine empires, a very turbulent period, characterised by a deep political and social transformation. The territory of today's Moravia (eastern part of the Czech Republic), inhabited by Slavs, was no exception.

This period is also described as proto-urban, which developed into the regular planned urban concept in the Mediaeval period. The proto-urban concept was reflected especially in the extensively fortified centres, often referred to as strongholds (e.g. Mikulčice, Pohansko, etc.). However these important centres of the 9th - 10th centuries AD were, unlike in the west, built "on greenfield sites" without previous settlements. Based on new research, these new proto-towns apparently did not last long and were abandoned after a very short period of time, so there must be an unexpected dynamic of development. All the factors mentioned above give us a unique opportunity to study situations that are little disturbed by previous or further interventions.

The urban concept in Great Moravian strongholds lacks easily defined and regular inner structure, which is more often present at strongholds in northern and western Europe. It was believed that the unorganised cluster form represents the predominant or even exclusive settlement form of the Slavic Early Middle Ages. This may not be completely true, as in recent years, we successfully recognised urban patterns. We were able to trace homesteads, roads passing through the strongholds, the spatial distribution of production areas, churches, churcheside but also solitary burial grounds, waste management etc. This points to the gradual evolution of the concept of urbanism. The paper will present the results of research on important early medieval Moravian strongholds from recent years with a focus on the description of the manifestations of urbanism.

PLISKA, PRESLAV AND THE EMERGENCE OF NEW MEGACITIES IN EARLY MEDIEVAL BULGARIA

Abstract author(s): Milo, Peter (MUNI - Ústav archeologie a muzeologie) - Aladzhev, Andrey - Dimitrov, Petar (National Archaeological Institute with Museum, Bulgarian Academy of Science) - Havelka, Jan (MUNI - Ústav archeologie a muzeologie) - Voykova, Maria (Varna Regional Museum of History) - Milová, Beáta (Archaeological Institute, Slovak Academy of Science) - Rekemová, Anna Mária - Šálka, Dávid - Tencer, Tomáš (MUNI - Ústav archeologie a muzeologie)

Abstract format: Oral

With the end of Roman rule over the eastern Balkans, most urban settlements came to an end. However, within the Bulgarian state established at the end of the 7th century, new settlements gradually emerged. This includes sites such as Pliska and Preslav, which belonged to the largest cities of the era, in terms of area comparable to the megacities such as Constantinople and Baghdad. Their history graphically illustrates the rise and fall of the First Bulgarian Kingdom as well as the re-occupation of the Eastern Balkans by the Byzantine Empire between the 8th and 11th centuries. Due to the rapid reduction of their occupied areas in the eleventh century and beyond, they represent the best-preserved metropolises from the Middle Byzantine period in the Balkans. As a result, many important parts of both cities have been archaeologically excavated – the Ruler's and Patriarchal complexes, aristocratic mansions, production and monastery ensembles, as well as numerous church buildings. The latest geophysical survey found that large parts of both sites show organized residential development of regular settlement structure with a regular network of roads lined with fenced courtyards. Our survey shows buildings of various kinds, including churches and multi-room residential stone houses often surrounded by a large number of wooden sunken huts. The structure of the built-up areas in Pliska and Preslav reveals a system for which we do not know a direct analogy. Although sunken huts are a common type of house in the Balkans, as well as in Central and Eastern Europe, the sacral and profane stone architecture – despite its local antecedents – has its roots mostly in Byzantium.

POTTERY BEYOND TYPOLOGY. PREHISTORIC VESSEL BIOGRAPHIES IN THE DOMESTIC SPHERE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Pyzel, Joanna (Maria Curie-Skłodowska University in Lublin) - Gomart, Louise (CNRS - UMR 8215 Trajectoires & Université Paris 1) - Stäuble, Harald (Heritage Office of Saxony)

Session format: Regular session

In this session we want to go beyond the very important function of prehistoric pottery for chrono-typological and cultural differentiation as the common praxis in archaeology, and take a closer look at the vessel biography including its whole lifespan from the production to the final deposition and at its large implications for the understanding of prehistoric domestic lifeways. We aim at gathering researchers working on various aspects of prehistoric pottery to discuss its production, use and discard in reference to the domestic sphere as a key to understand social life in prehistory. We want to address research methods and discuss how we can recognise different stages of production and uses within houses and settlement structures. We also intend to discuss various interpretations: where is the pottery production happening and who is producing it within or beyond the domestic sphere? Who used the pottery and how producers and users related to each other? Is there a difference between the intended meaning and the different social values of pottery? Does pottery social value change over time? Conversely, we want to consider which implications these topics have for the typological analysis of pottery and its interpretation.

We welcome contributions focusing on the following issues:

1. The production and the producers of pottery,
2. The different “uses” and the multiple ways of functioning of pottery (from intention to praxis),
3. The many cycles of vessels and the many lives of pottery (from vessel to sherd),
4. Fragmentation and its different meanings,
5. Repairing and refunctioning of vessels – the value of pottery,
6. The ultimate abandonment of pottery.

ABSTRACTS

1 WHAT IS A GOOD SHAPE? COMPARING PREHISTORIC VESSELS USING GEOMETRIC MORPHOMETRIC ANALYSIS

Abstract author(s): Pyzel, Joanna (Maria Curie-Skłodowska University in Lublin) - Suhrbier, Stefan (University of Cologne)

Abstract format: Oral

Standard pottery typology classifies vessels to various types basing on guesstimations of differences in shape, sometimes supported by some metric data such as basic height-width proportions. These types constitute a starting point of further studies, including hypothesis on vessels function and use but the basis of such typologies is seldom questioned. In our presentation we would like to test the applicability of geometric morphometric analysis for investigating hand-made prehistoric vessels. We will focus on two case studies from the Neolithic in Central Europe: the so-called globular vessels of the Linear Pottery Culture, which is a large group of loosely defined, quite various “globular” shapes, seldom differentiated. Here, we will analyse the assemblage of ca. 150 complete vessels from the region of Kuyavia in the Polish Lowlands. The other case study will comprise ca. 150 vessels of the Middle Neolithic in west and southwest Germany, for which a chronological trend is visible when comparing the proportions of different metric data. We intend to test if geometric morphometric analysis can bring us further beyond these results and how useful it can be for future pottery analysis.

2 FROM BITS AND PIECES. HOW STATISTICAL TOOLS CAN HELP US BETTER UNDERSTAND POTTERY ASSEMBLAGES

Abstract author(s): Hegedus, Zsuzsa (Hungarian National Museum National Institute of Archaeology; Eötvös Loránd University Institute of Archaeological Sciences; MTA-ELTE Lendület „Momentum“ Innovation Research Group)

Abstract format: Oral

The pottery assemblages of prehistoric settlements are often difficult to work with, mostly due to the high ratio of fragmented vessels. In a multitude of cases, this prevents the reconstruction of vessel shapes, and consequently, the traditional typological examinations. Due to this problem, a new approach should be considered: instead of trying to fit the pottery sherds into pre-existing typological categories, I propose a bottom-up classification method that

compares the characteristics of the fragments and forms clusters accordingly. With the use of a multi-step statistical analysis, it is possible to outline groups of sherds that reflect the different kinds of vessels used by the communities. Exploring the characteristics by which these groups of fragments can be defined gives us an insight into several aspects of pottery production and use. The clear distinctions signal that the potters were working within specific mental frameworks. Influenced by their sociocultural context and working with its toolset, the potters made a chain of conscious decisions to manufacture pottery that fulfils given practical functions. Although this function can vary, and we cannot reconstruct all the roles a vessel played throughout its lifetime, with the use of a wide range of ethnoarchaeological data, the specific characteristics can be linked to certain vessel functions. The functional reconstruction can then be used to better understand the behaviours linked to pottery use, and also the patterns of disposal.

Through the case study of fragmented pottery assemblages of the Hungarian Middle Copper Age (4000–3700 BC), I present the possibilities of a statistics-based methodology, aiming at functional reconstruction.

3 UNDERSTANDING POTTERY - A PREREQUISITE FOR TYPO-CHRONOLOGY

Abstract author(s): Frirdich, Christiane - Stäuble, Harald (Landesamt für Archäologie Dresden)

Abstract format: Oral

In 2009, a long-term project was realized in Eythra, a large-scale and find-rich Linear Pottery settlement in western Saxony. The aim was, besides the presentation of the finds and features, above all methodological criticism.

As usual in Eythra the chronological order of the finds and features had priority. In archaeology it is the necessary prerequisite for answering questions of cultural history. This is the reason for the primacy of typo-chronology, among others, in the settlement research of the Linear Pottery of Central Europe. Here, dating is based on the idea of linear style developments of ceramic decoration elements in the respective settlement area. Furthermore, it presupposes that in the past ,simultaneously' existing ornamental elements were deposited in closed, i.e., immediately filled and subsequently not changed contexts.

This model has been criticized on various occasions in the past. Style developments often do not proceed linearly even in relatively small settlement areas but are an expression of sometimes contradictory interests of the pottery producers. At the same time, so-called ,outliers' are found again and again in so-called closed deposits. Finds for which experts know that they cannot belong together chronologically. In fact, dating accuracies are getting worse and worse. What we do not know and accordingly cannot control has a negative effect on dating.

Addressing the issues announced in this lecture series should be the desideratum of any typo-chronological research. In this paper, some examples from Eythra will be used to show why typo-chronological research needs further knowledge about its source material.

4 THROUGH THE LOOKING GLASS: LBK POTTERY DECORATION

Abstract author(s): Pilar, Daniel - Kvetina, Petr (AU - Institute of Archaeology of the Academy of Sciences of the Czech Republic, Prague)

Abstract format: Oral

The aim of this paper is to test the possible influence of formation processes of the archaeological record on the conception of the chronological development of the LBK (5500-4900 BC) decorative style, using selected features from the site Bylany (Czech Republic) as an example. The development of the LBK chronology has so far been based on the relative representation of individual decorative styles within the house unit. However, the analysis of fragmentation shows that the individual decorative styles do not occur in features in a homogeneous qualitative state, and the formation processes also influence their frequency. The cause may be the different levels of recognisability of the decorative styles, but also the problem of possible non-synchronous filling of the objects. In this sense, the interpretation of the house unit as a chronologically homogeneous complex should also be considered problematic, as the spatial relationship of the pits to the house cannot be unambiguously determined in a high concentration of buildings especially in a long-time occupied settlement. At the same time, the infills of individual features are significantly heterogeneous and cannot be understood as the result of analogous processes. The above-mentioned circumstances thus considerably affect the current understanding of the chronology of LBK in Bohemia and indicate the fundamental importance of formation processes in the study of settlement sites.

5 WHAT CERAMIC CAN TELL US ABOUT THE (AFTER)LIFE OF AN LPC-HOUSE

Abstract author(s): Kreienbrink, Frauke (Archaeological Heritage Office of Saxony)

Abstract format: Oral

The aim of the paper is to show how not only the study of the features and the stratigraphy, but also the analysis of the find distribution and taphonomic studies of the pottery can contribute to understanding complex find and feature situations with a possible preservation of the living horizon. As an example, one of the large houses of a Linear Pottery

Culture (LPC) settlement in Clieben north of Dresden in Saxony, Germany, will be presented. The site was found on the Younger Lower Terrace in the immediate vicinity of the recent Elbe floodplain. Due to the later covering of the site by alluvial loam, hardly any erosion took place and thus an occupation layer with numerous embedded finds was preserved over a large area. The analysis of the find distribution promised so far unknown insights into activities within and around the houses. One of the houses revealed a specific finds situation with extensive concentrations of artefacts, which suggest a preserved floor surface within the house. In the course of detailed investigation, however, it becomes more and more apparent that this interpretation is not mandatory. Ceramic preservation and distribution obviously refer to the time after the house was abandoned. So it is necessary to consider the possible further use of the houses or their ruins respectively after they are no longer inhabited and what kind of traces this produces in the archaeological record. Ultimately, it is a question of how the abandoned houses or their ruins are dealt with in a settlement that continues to be inhabited and to what extent they are still part of the domestic sphere. The talk will focus on the particular contribution of taphonomic studies of pottery to clarifying these questions.

6 THE SENSE OF POTTERY BREAKAGE: HOW BROKEN POTS SHAPED SOCIAL PRACTICES IN EARLY NEOLITHIC KÖRÖS-CRIȘ SETTLEMENTS

Abstract author(s): Vindrola-Adrós, Bruno (XSCAPE Project on “Material Minds” - ERC 2020 Synergy Grant 951631)

Abstract format: Oral

This paper explores the social role of pottery breakage and, more importantly, how these phenomena effectively shape domestic activities. Pottery breakage has been normally understood in a linear fashion. That is, it is a process that happens after using vessels for a certain time and then these are either reused in some way or discarded. While this can certainly be the case sometimes, there is more to be understood about how breakage develops and what is done with the fragments produced. The aim of this paper is to illustrate how breakage modifies human behaviour in various ways throughout object's trajectories, from how we handle or observe objects that appear to be breaking to what we effectively do with the pieces. For this task, a first step taken in this paper is to follow a theory of breakage that understands these phenomena as constantly unfolding, rather than instantaneous events, which ultimately contributes to a broader understanding of the role pottery fragments can have in social practices. A series of methods are then presented for analysing the mechanical behaviour of ceramics, which informs us of how pots actually break, as well as sherd use-wear traces that indicate how fragments are reintegrated in specific human activities. These methods were applied to study potsherds from Early Neolithic pits and occupation layers in Körös-Criș settlements in the Upper Tisza/Tisa Basin, and unveiled: (1) that Körös-Criș organic-tempered ceramic replicas exhibit crack deflection and bridging mechanisms that increase its toughness (i.e. a ‘cracking technology’), and (2) that potsherds had important roles in pottery manufacture and potentially in cooking activities.

7 POTTERS AND HOUSES: FROM PRODUCTION CYCLES TO SETTLEMENT DYNAMICS IN THE EARLY NEOLITHIC OF THE PARIS BASIN

Abstract author(s): Gomart, Louise - Gabriele, Marzia (French National Centre for Scientific Research)

Abstract format: Oral

Excavations carried out over the past 40 years in the Aisne valley (Picardy, France) have yielded over a dozen LBK sites characterized by housing units with virtually no overlap, allowing for detailed analyses of their associated domestic assemblages. This context is an ideal case study for discussing the production and distribution cycles of pottery at the house level. Using the concept of chaîne opératoire to address pottery biography, this paper aims at reconstructing the sequences of technical gestures implemented by the early Neolithic potters, from the selection and preparation of raw materials to forming, finishing and firing in order to reveal technical traditions transmitted within learning networks. The combination in this study of petrographical, micro- and macroscopic surface and section analyses (notably using micro-tomography and microfibrils) allows for a high-resolution tracing of those learning networks in time and space at the scale of the Aisne valley, revealing the trajectories of distinct groups of producers in the various settlements and houses.

8 OLD HABITS DIE HARD: EARLY AND MIDDLE COPPER AGE CERAMIC TECHNICAL TRADITIONS IN THE BUDAPEST REGION, HUNGARY

Abstract author(s): Solnay, Eszter - Szilágyi, Márton (Eötvös Loránd University, Institute of Archaeological Sciences, MTA-ELTE Lendület „Momentum” Innovation Research Group) - Virág, Zsuzsanna - Szilas, Gábor - Kraus, Dávid (Budapest History Museum) - Siklósi, Zsuzsanna (Eötvös Loránd University, Institute of Archaeological Sciences, MTA-ELTE Lendület „Momentum” Innovation Research Group)

Abstract format: Oral

Many significant research results have recently been achieved in studies on the Early and Middle Copper Age in the Carpathian Basin (4500–3700 cal BC). One of these is a new chronological framework partly based on the disputing of traditional stylistic separation. Three settlements have recently been analysed in the Budapest Region: Budapest–Dobogókő street, Rákoscaba–Majorhegy and Budapest–Növény street. These sites were defined by three ceramic styles: Ludanice, Protoboleráz, and Furchenstich. However, using the traditional typological approach, we cannot identify long-term technical traditions and real social connections, what would be crucial to do given the geographic and chronological proximity of the sites.

Thus, a technological analysis was carried out on the ceramic assemblages to identify forming techniques which appear to be resistant to change. This is in absolute contrast with the rapidly changing pottery forms and decorative styles. It is caused by the fact that the necessary motoric and cognitive skills become automatic during the learning process which always takes place in socially connected communities of practices. Therefore, social relationships can be detected by examining long-term fashioning traditions.

The technological analysis of the pottery assemblage excavated at the three settlements enables us to understand Copper Age pottery production practices and the transmission of knowledge in the domestic sphere. Similarities or differences in ceramic fabrication can reveal communities of practices that might be linked with other regions in the Carpathian Basin. Thus, this strongly contributes to the understanding the Budapest Region’s intra- and extra-regional connections. Our contribution aims to re-examine the relationship between technological data and ceramic styles to understand more about the hidden patterns of cultural and social embeddedness.

9 TRACKING CERAMIC CHAÎNES OPÉRATOIRES WITHIN EVERYDAY LIFE SPACES TO BRIDGE VESSELS’ AND HUMANS’ BIOGRAPHIES. SOME METHODOLOGICAL REFLECTIONS FROM WEST-ASIAN FIELDWORKS

Abstract author(s): Zingarello, Melania (Oriental Institute of the Czech Academy of Sciences) - Baldi, Johnny Samuele (CNRS, Archéorient)

Abstract format: Oral

The study of vessels’ biographies – namely the series of actions, customs, gestures and procedures taking place throughout their cycle of interactions with humans – is often dominated by a polarisation of the focus on a specific phase of their ‘lifetime’ and the heuristic perspective that follows. By studying the ceramic chaînes opératoires, one looks at the methods, structure and organisation of the past production systems and craftspeople behind them. While analysing shapes, decorations, functions and ways of deposition means investigating the practices of handling and disposal of the pottery users. The spatial contextualisation of the pottery chaînes opératoires, especially within the domestic spaces of living and working, constitutes an approach that makes it possible to interpolate the study of craft production with that of the practices performed with the pots. Through case studies of late prehistoric (5th and 4th millennia BCE) and Early Bronze Age (3th Millennium BCE) contexts from Tell Feres al-Sharqi (in the Syrian Jazeera, Hassake Province) and Logardan (in Iraqi Kurdistan, Sulaymaniyah Governorate), this paper aims to present and discuss the conditions allowing for the application of this approach, as well as its informative potential as a heuristic means. The aim is to show what the mapping of the spatial distribution of operational sequences can reveal about the relationships structurally linking the various phases of a vessel’s biography as a function of the social organisation of the community that produced, used and discarded it.

10 POTTERY-MAKING AND USE DURING THE EARLY IRON AGE: DEVELOPMENT AND VALIDATION OF A FUNCTIONAL TYPOLOGY IN ITTENHEIM (ALSACE, FRANCE)

Abstract author(s): Philippe, Marie (ANTEA-Archéologie, UMR 6298 ArTeHiS)

Abstract format: Oral

More than 1,700 vessels dating from the Early Iron Age were discovered in two pits in Ittenheim (France). This huge quantity of sherds, discarded at the same place and during a short time interval, offers a strong recurrence without any spatial or chronological distortion. This gives the opportunity to question pottery intended function and actual use, referring to Skibo’s work.

A functional typology was first based on descriptors related to the intended function of the vessels: morphology, technology, decoration. Several steps were necessary to develop the typology. In the end, 1,285 vessels were classed into 13 groups. Referring to Rice and Skibo's works, the characteristics of each type were analyzed to suggest one or more possible functions: cooking, storage, preparation and service of liquids etc.

The most interesting part of the discussion is provided by a comparison with use-alteration traces. They are indeed specific and recurrent within each functional type. It reveals that several vessels among each type were used in a same way, this way being different from another type. Thus, use-alteration traces validate the groups and lead to discuss the correlation between the theoretical function and the actual use of ceramics. Moreover, one can question the way potters adapted their chaînes opératoires to a theoretical consumers' need. Beyond interesting methodological aspects, one reconstructs behaviors related to daily food processing and consumption. For example, this study suggests boiled food consumption and fermented beverages preparation. Some vessels have complex biographies, as they have been perforated afterwards to become filters. In this case, intended function and actual use do not correlate. In the end, this case study gives a rich understanding of how people made pottery, ate, and adapted their vessels to their needs. It is also helpful to discuss the signification one can give to a pottery typology.

11 TEMPER UNDER CONTROL. NEOLITHIC SHELL-TEMPERED COOKING POTS

Abstract author(s): Sobkowiak-Tabaka, Iwona (Faculty of Archaeology, Adam Mickiewicz University in Poznań) - Kurzawska, Aldona (Institute of Archaeology and Ethnology, Polish Academy of Sciences)

Abstract format: Oral

Mollusk shells, especially of freshwater origin, are raw materials widely used throughout prehistory to make ornaments, tools, and household utensils. Moreover, they were frequently used as a temper in pottery production and as ingredients of building materials. In Neolithic Central Europe, crushed shells were used as a temper in the production of cooking pots but only by specific communities. It was a significant technological innovation as pottery production required different procedures and knowledge related to resource management, manufacturing process, and their properties.

In our studies of the Trypolje cooking pots, we managed to identify shells used for temper production and their provenience. We traced the production process of shell-tempered pots through experiments starting from the making of the temper through the production of vessels and their use in cooking. Multiple analyses such as microscopic observations, lipid analysis (both GC-MS and UPLC-MS), and petrographic studies (thin section and XRD analysis) of ceramic fragments obtained during archaeological investigations were applied. Results from the analyses and the knowledge gained during the experiments led us to clarify the whole process of shell-tempered pottery making, their properties that affect the cooking process, the products cooked in them, what they were used for, and a possible reason for the temper choice.

12 LIFE-CYCLES OF NEOLITHIC POTTERY: USE AND SECONDARY USE VS. TYPOLOGY

Abstract author(s): Svirar, Marija (independent) - Vuković, Jasna (Department of Archaeology, Faculty of Philosophy, University of Belgrade)

Abstract format: Oral

Although pottery is in focus of many research, biographies of ceramic containers are still challenging field of investigation. Research have shown that the Early and Late Neolithic ceramic containers in the Central Balkans went through dynamic use-lives, from their entering into the context of use, to their discard. Different stages in vessels' life-cycles will be presented both for Early and Late Neolithic: actual use – food (food preparation, thermal processing) and non-food related (storage of pigments and/or herbs; moistening of fibers); secondary use (storage of other vessels and tools, lids, usage of fragments as tools), and extended use, with specific emphasis on curation and repairs as expressions of social values. These various modes of usage urge the need for reconsidering the notion of ceramic assemblages, usually seen as contextually and chronologically associated group of finds. More importantly, identification of various stages in pottery life-cycles further leads to the need for re-examination of the role of typology as the most common methodological tool for pottery analysis and its relevance for understanding social relations and lifeways in the past.

13 VESSELS ON THE FLOOR - POTTERY IN THE CONSTRUCTION OF THE HOUSEHOLD

Abstract author(s): Soares, Inês (FCT – Foundation for Science and Technology; CIBIO InBio – ENVARCH; University of Coimbra)

Abstract format: Oral

Pottery containers, vessels, like any other object of our daily life, apart from their primary function, can bring together different uses.

The pottery vessels are the result of different transformations, related to the activities carried out within a community. The vessels are objects, exposed to a core of practices with different social and technical meanings, according to individual and/or collective actions, in a time and space of a complex social/physical and economic mosaic.

Given the variety of concepts to which the pottery object is exposed, we will, almost always, find it in the foundation and organization of the domestic unit, the household, i.e., an event - of and in - the construction of the domestic, physical and social space/sphere, an architecture and part of the architecture.

On the southern hill of Castelo do Sabugal (Sabugal, Guarda), Beira Interior of Portugal, the identification of an Iron Age hut, composed with a calcined clay floor, became the starting point to this approach.

Under the clay floor, several pottery fragments were collected, belonging to diverse containers (vessels) and, in this context, associated with the foundation levels and regularization of the circulation floor in the interior of the hut.

Any object is the skeleton, around which a scenario is organized, a way of non-verbal communication. In this way, we propose to understand the different meanings/uses of pottery fragments identified in this archaeological context - we intend to analyze the vessels, socially produced and socially used, in their life cycle, containers of practices/actions/forms and uses, up to the last function, under the flooring.

14 COOKING ANIMAL AND PLANT SUBSTANCES AMONG THE FIRST POTTERY-MAKING SOCIETIES IN SOUTHERN LEVANT: AN INSIGHT FROM CHARRED RESIDUES OF POTTERY

Abstract author(s): Vieugue, Julien (CNRS, Université de Paris-Nanterre, TEMPS) - Duncan, Lindsay (McDonald Institute for Archaeological Research, University of Cambridge) - Mazuy, Arnaud (Université Côte d'Azur, CNRS, CEPAM) - Ramsey, Monica (Department of Anthropology, University of Toronto Mississauga) - Regert, Martine (Université Côte d'Azur, CNRS, CEPAM)

Abstract format: Oral

It is now known that the first pottery-making societies in the Levant used pottery to cook their food. Nevertheless, many questions remain unanswered about the cuisine of these Neolithic communities who lived during the late 7th/early 6th millennium cal. BC: What type(s) of food preparations were cooked in the ceramic vessels? Which cooking technique(s) were used? How was the food cooking organized inside the Neolithic villages? To answer these questions, we undertook the thorough analysis of 153 cooking pots coming from the major Early Pottery Neolithic sites of Sha'ar Hagolan and Muntaha located in the Upper Jordan Valley. Our multidisciplinary study method, developed at the interface between traceology, chemistry and botany, is based on the combined macro-, microscopic, molecular and isotopic characterization of the inner charred residues of Neolithic pots. The visual aspects of the food crusts and their distribution alongside the profile of the ceramic vessels suggest that all the pots were used to boil foodstuffs by being placed in the center of stone hearths. The integrated analysis of lipids, phytoliths and starches trapped in the inner charred residues of these ceramic vessels revealed that they had contained various food preparations based on animal and plant substances - including domestic plants such as wheat and barley and wild grasses and fruits such as acorns. The spatial distribution of the cooking pots inside the two Neolithic villages clearly show that the preparation of meals was mainly carried out at the household scale.

15 BROKEN POTS, UNBROKEN HABITS: TRACES OF POTTERY USE-ALTERATION SPANNING THROUGH THE FIRST MILLENNIUM OF NEOLITHIC IN THE WESTERN CARPATHIAN BASIN

Abstract author(s): Jakucs, Janos (Eötvös Loránd Research Network Research Centre for the Humanities Institute of Archaeology) - Kreiter, Attila (Hungarian National Museum Laboratory of Applied Natural Sciences) - Oross, Krisztián - Gucsi, László (Eötvös Loránd Research Network Research Centre for the Humanities Institute of Archaeology) - Botić, Katarina (Institute of Archaeology, Zagreb) - Marton, Tibor (Eötvös Loránd Research Network Research Centre for the Humanities Institute of Archaeology)

Abstract format: Oral

The earliest production and use of ceramic vessels in the western part of the Carpathian Basin, was introduced by the first farming communities. Their Starčevo-style pottery is characterised by a bonded technological tradition and design implemented in fairly uniform manner over a large geographic area. In the middle of the 54th century cal BC, various pottery styles were created and homogeneity was replaced by stylistic diversity, represented by the co-occurrence of Vinča, LBK and Ražište styles in southern Transdanubia. Our analyses, recently performed on pottery samples from several Transdanubian sites turned the spotlight from the swampy ground of chrono-typological debates towards the technology and the role that craftspeople played in the wider social network. The analysis of wear patterns and alteration, however, is an area that has not been fully exploited in our region. Pottery not only conveys the different traditions of potters' workshops, but also works as a versatile tool widely used in everyday life either as a whole earthen ware or a potsherd, thus incorporating a whole range of social activities. The function of a pot can also go beyond its primary function of storing and preparing food, and it can be exposed to various effects. In our study we

intend to present traces left behind by users and recyclers from different regions and eras, deriving behavioral inferences. Our examinations of ceramic vessels from different sites revealed strikingly similar patterns of attrition, secondary modification, repair, and fragmentation in some cases, even though the vessels' technology and design show considerable differences. In our presentation we provide a summary of these marks, and identify some standardized habits, which appear to span the conventional boundaries of archaeological cultures and phases.

16 **CHRONOLOGICAL TRENDS IN POTTERY USE FROM THE NEOLITHIC TO THE IRON AGE IN SAXONY (GERMANY) USING LIPID RESIDUE ANALYSES**

Abstract author(s): Roffet-Salque, Melanie - Wiltshire, Isabel - Maule, Charlie - Abdelgani, Iman (Organic Geochemistry Unit, School of Chemistry, University of Bristol) - Conrad, Matthias - Halle, Matthias - Kretschmer, Saskia - Schmalfuß, Germa (Landesamt für Archäologie, Dresden) - Wolfram, Sabine (Staatliches Museum für Archäologie, Chemnitz) - Stäuble, Harald (Landesamt für Archäologie, Dresden)

Abstract format: Oral

The analysis of lipids preserved in the clay pores of archaeological pottery is a powerful method for investigating pottery function and past diet. The use of state-of-the-art analytical methods, including chromatographic, spectrometric and isotopic methods, allows for the identification and characterisation of terrestrial and aquatic animal fats, plant oils and waxes, that arise from the cooking of animal and plant products in ceramic vessels.

Here we investigate > 340 pottery fragments from 6 archaeological sites across Saxony spanning around four millennia of occupation, from the Early Neolithic (Linearbandkeramik) until the Iron Age. Using lipid analyses of pottery sherds, we explore diachronic change in pottery use, subsistence practices, herding strategies and freshwater resource exploitation. In particular, lipids provide unique insight into the exploitation of wild and domesticated resources in the region, where faunal remains are usually ill-preserved. This study provides a stepping stone in the construction of regional climate records using hydrogen isotopic analyses from animal fats extracted from pottery and the direct ¹⁴C dating of pottery lipids.

17 **RARE INSIGHTS INTO CERAMIC BIOGRAPHIES: REMARKABLE VESSELS FROM THREE LINEAR POTTERY WELLS FROM SAXONY, GERMANY**

Abstract author(s): Schell, Frank - Stäuble, Harald (Landesamt für Archäologie Sachsen)

Abstract format: Oral

The analysis of archaeological finds often focuses, by necessity, on their fragmentary occurrence. For example, regular pottery analysis from prehistoric contexts is limited to thousands of individual sherds that rarely represent more than 10% of a former vessel. Now, what about the rare cases where whole vessels are found? Beside the so-called grave pottery, about whose production, use and last function is discussed quite a lot, there is since some years a relatively new category of finds, in which whole vessels are found more often: the wells of the Linear Pottery Culture (LPC). Due to their storage in a humid environment, these vessels have also preserved organic material and thus a multitude of previously unknown details of clay vessels. Thus, rare insights into individual "fates" of some vessels are possible here.

In addition, the impression increasingly arises that the wells were at least partially deliberately refilled after their use as water sources. However, this was not done with "waste" material as in other pits of this culture, but with complete clay vessels, some of which are still intact and usable today. Thus, some of the meanwhile numerous Early Neolithic well finds showed that parts of the backfill of such well shafts must have been regularly deposited: The well as a momentary Pompeii premise.

On the basis of a selection of Linear Pottery well finds from Saxony, Germany, we want to present some individual vessel biographies, which show all aspects of a longer use and special treatment: the use, repair, redesign of the decoration and further use, but at the same time also their deposition and thus the abandonment of their "earthly" life.

18 **FLows, TRANSFORMATIONS, AND TEMPORALITIES IN POTS' LIFE HISTORY: THE CASE OF NEOLITHIC DISPILIO, NORTH GREECE**

Abstract author(s): Voulgari, Evangelia (Laboratory Teaching Staff, School of History and Archaeology Aristotle University of Thessaloniki) - Sofronidou, Marina (Ephorate of Antiquities of Drama) - Kotsakis, Kostas (Professor Emeritus of Prehistoric Archaeology, School of History and Archaeology, Aristotle University of Thessaloniki)

Abstract format: Oral

In this paper, we present practices of repairing, reshaping, and curating pottery containers from neolithic Dispilio. Dispilio is the first wetland site excavated in Greece and has been systematically investigated since the 1990s' by the Aristotle University of Thessaloniki. In the multi-layered diachronic development of the settlement from the mid-6th

to the early 5th mil BCE, we have recorded various changes in pottery repairing and restoration techniques and practices. Hundreds and different types of reworked sherds and more than 200 repaired pots in the large corpus of the about 1670 whole pots and profiles we have restored so far, provide us the necessary framework to shed light on the various forms the reuse of pottery had in different periods. In addition, the analysis of repairing attributes, such as the relative incidence of mending per pottery ware type, direction and size of the drilled holes, their place on the vessel body, and the visibility of the repairs, alongside the study of the great typological diversity of the ceramic tools provide new data on the economic and socio-ideological aspects that ceramic consumption had for neolithic communities in Greece. Our study is supported by the ERC-funded EXPLO Project.

19 THE BIOGRAPHY OF A NEOLITHIC STORAGE JAR IN LACONIA, GREECE

Abstract author(s): Katsarou, Stella - Darlas, Andreas (Ephorate of Palaeoanthropology-Speleology)

Abstract format: Oral

This presentation explores the biography of a storage jar going through changing yet interdependent 'life stages'. The container was found in a burial context (the double burial of a male and a female) dating from the end of the Neolithic in a coastal cave of Laconia, Greece. The site forms part of a network of funerary caves on the same coast. We reconstruct the thread of the life of the jar as a skillfully crafted product originally that became a practical household object subsequently and finally a funerary facility. Certain practices that occurred during the burial episode affected its physical integrity and mark the transition from the domestic to the funerary. Nonetheless, the pithos comes to the burial with a strong symbolic register accumulated from its previous role as a domestic apparatus. This 'stored' resource is integrated into the new context and even becomes inextricable for the transformation of the jar as well as the assemblage and an agent empowering worldviews about the relationship between life and death.

20 DESIGNED FOR LIFE OR DEATH? POTTERY CHARACTERIZATION STUDY TO ASSESS CULTURAL DYNAMICS AT THE BRONZE AGE SITE OF TORRE CASTELLUCCIA

Abstract author(s): Serino, Donatella - Palazzini, Flavia - Pizzuti, Elisa (Sapienza University of Rome)

Abstract format: Oral

The site of Torre Castelluccia is located on a coastal promontory facing the Gulf of Taranto (Apulia). It is one of the very few Bronze Age archaeological contexts in Italy where both dwelling areas and adjoining burials (i.e. grotticella tombs and a cremation cemetery) have been investigated. Recently, the renewed study of ceramics led to the definition of a reliable chrono-typological sequence for the site, whose occupation history goes from the South Italian Middle Bronze Age (1700-1300 BC) until Greek colonization (around 700 BC). Based on this dataset consisting of more than 1000 sherds and vessels, further research proceeded to examine the characteristics of impasto pottery from a technological perspective. The procedure began with the macroscopic observation of the pastes using a portable digital microscope. This preliminary step aided in the accurate description of a large number of sherds and in the diagnosis of the variability of the pottery assemblage, as well as in the selection of representative samples for the petrographic analysis. The opportunity to compare pots from different contexts of use (domestic and funerary spheres) – preferably considering analogous functional forms – increased the worth of the analysis by revealing specific features that may reflect two distinct pottery manufacturing lines. The key objective of this research was therefore to provide new data on the craft community, the social organization of pottery production and the biography of pots. Furthermore, it attempted to assess whether technological traditions at Torre Castelluccia varied over time due to functional and cultural choices. In this paper, we will discuss the project and the methodology used in the reconstruction of craft activities and their cultural implications.

21 DOMESTIC POTTERY IN A FUNERARY CONTEXT. UNDERSTANDING A SPECIFIC LIFE CYCLE OF VESSELS

Abstract author(s): Fülöp, Kristóf (Research Centre for the Humanities Institute of Archaeology)

Abstract format: Oral

With the appearance of cemeteries, the domestic and funerary areas became separated. Despite the territorial separation, the interconnection between these two spheres remained active and important until these days. This connectivity is often emphasised but rarely investigated from the perspective of domestic potteries which were selected and integrated by the living into the various phases of funerary ritual.

In my presentation, I will demonstrate the importance of this approach through the complex analysis of grave goods from a Late Bronze Age cremation cemetery (Jobbágyi, Hungary) and the comparative study with settlement materials of the Tumulus Grave period (1500-1300 B.C.). The analysis of use-wear traces, the undisturbed context of the grave pits, and the special characteristics of secondary burning during cremation allow the recognition of domestic vessels in the toolset of the burial ritual.

The aim of my presentation is to reconstruct a specific, so far little-examined life cycle of household potteries, which is the moment when the domestic and funerary spheres intertwine. What are the reasons and rules behind the selection and refunctioning? What old and new functional roles are associated with these objects? In what way does this transform the former social value of the vessels in this highly symbolic space? How are object and men, object and user interconnected in the expression of identity and status?

241 **TRADING GENES FOR CUSTOMS: RECONSTRUCTING CROSS-CULTURAL CONNECTIONS USING BIOMOLECULAR APPROACHES**

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Franicevic, Branka (University of Bradford) - Pareja Cummings, Marie Nicole (University of Pennsylvania)

Session format: Regular session

Despite methodological advancements being made in the area of biomolecular archaeology, some areas remain more thoroughly researched than others. Human migration, the fossil record, and animal domestication for instance attract large-scale research while studies regarding the relationships between culture and genes lag.

This session explores the integration of genome science into potential social structures of trade regions, and in doing so sets out to expand archaeological frameworks for interpreting genetic data.

What can ancient DNA tell us about cross-cultural connectivity and exchanges? How can plant and animal DNA inform us about the lifestyle and diet of the trade cities and ports? What can we learn from palaeomicrobiology about plagues spreading along trade routes and pathogen-population relationships? Can an application of genetics to historical evidence shed light on the dissemination of religions and religion-influenced behaviour, such as interfaith marriages, or gender mobility? What are the new genetic methods in biosocial archaeology? What are the approaches for standardisation of digital data usage and data sharing?

We are interested in wide-ranging contributions including field reports, case studies, and interdisciplinary research that interpret Afro-Eurasian gene culture circa 130 BC to 1450 AD. We encourage submissions from early-career scholars and researchers from the fields of genetics, bioinformatics, bioarchaeology, and anthropology.

ABSTRACTS

1 **BIOMOLECULAR STUDIES IN ARCHAEOLOGY: ETHICS, SAMPLING, AND CULTURAL HERITAGE**

Abstract author(s): Pareja, Marie (University of Pennsylvania; Aegean Bronze Age Study Initiative)

Abstract format: Oral

Although biomolecular studies in archaeology may contribute ample information to the field and allow for critical new insights into the lives and cultures of past peoples, such studies also raise several critical ethical questions. One such issue is related to the structural disturbance of human remains and rare artifacts. The risk of damaging unique archaeological specimens is often high, which may reduce the amount of information capable of being gathered from them in the future. Appropriate use and storage of the remaining samples is less frequently considered, as well as the use and application of the resulting data – particularly in light of potential for the misuse of such information. It is crucial for archaeologists and their collaborators to engage in open and ongoing dialogue about the ethical considerations of such methods, to ensure that the ever-developing best practices are followed to minimize potential harm to both cultural heritage and descendant communities.

2 **SISTER FROM ANOTHER MISTER? AN ELUSIVE CASE OF LITTLEMORE PRIORY**

Abstract author(s): Franicevic, Branka (University of Bradford)

Abstract format: Oral

Although molecular biology may allow a glimpse into a past lifestyle, its application can also pose an ethical dilemma. This project explores life behind the veil in a medieval Oxford nunnery, particularly health and daily monastic activities. Osteology and cemetery morphology were employed to establish biological profiles and to understand whether nuns were buried apart from the parishioners. To learn about the domestic, vocational, and financial backgrounds of religious women, historical sources were utilised. Low levels of illness and disease implied a wholesome diet and healthy lifestyle. The activity-induced musculoskeletal stress markers on the tali and tibiae indicated extensive squatting and kneeling. Among 92 excavated individuals, however, three adolescents and 13 children were identified. One young adult female was further buried in a prone position with a six-month-old baby. Written records indicate violations of

ordination vows, raising the debate of whether genetic relationships should be established among the cloistered clergy of Littlemore Priory.

3 MIGRATIONS BETWEEN BRITAIN AND IRELAND AND THE INDIAN SUBCONTINENT 710-94 BCE VIA THE BALTIC-VOLGA-CASPIAN ROUTE AND THE ROUTE AROUND AFRICA

Abstract author(s): Malmi, Pasi (Dassault Systemes)

Abstract format: Oral

According to the DH method, prehistory should be studied as a process in which genes, ecofacts, and cultural replicators migrate from region to region and from generation to another. This method recommends the usage of the Genetic Atlas of Human Admixture History (GAHAH), Least Cost Analysis (LCA), quantitative measurement of cultural similarities, lexicostatistical word lists, and onomastic databases in all studies of ancient times.

Based on GAHAH analysis, Pakistan received nine migration waves from the British Islands 4600 – 40 BCE, and sent one migration wave to Britain and Ireland around 500 BCE (range of confidence 710–94 BCE). Based on LCA and GAHAH analysis, the migrations towards Pakistan followed the Baltic – Volga – Caspian Sea route. This route is supported by linguistics and by a database study of 23 ancient name sets, which revealed relatively clear migration paths that matched this route.

The analysis of GAHAH data revealed also a migration corridor from the Indian Ocean to Namibia, Morocco, Iberia, and Britain and Ireland 850–400 BCE. This corridor is supported by three historical sources, according to which Indians had a colony in West Africa, Indigetes lived in the city of Indika in Iberia, and an Indian tribe had sailed to Germania to do commerce. It is also supported by lexicostatistical data, according to which Wolof (Senegal), Guanche (Canary Islands), and Basque have a 10–50% similarity with the Dravidian languages of India. In addition, the Indian haplogroup M1 appears at the Canary Islands and in ancient Basque tombs in the form of M1c, which did not migrate via continental Africa. According to archaeological evidence, the connection from India to East Africa started 3250–2500 BCE, when Asian bananas migrated to Africa, and African sorghum millet migrated to India.

4 DEMOGRAPHIC TRANSITIONS? ARCHAEOGENETIC ANALYSES OF LATE ANTIQUE AND EARLY MEDIEVAL CEMETERIES FROM THE RHINELAND

Abstract author(s): Lacher, Laura (Max-Planck Institute for evolutionary Anthropology) - Nieveler, Elke (Rheinisches Landesmuseum Bonn) - Pääffgen, Bernd (Ludwig-Maximilians-Universität München) - Schmauder, Michael (Rheinisches Landesmuseum Bonn; Universität Bonn) - Gretzinger, Joscha (Max-Planck Institute for evolutionary Anthropology) - Krause, Johannes (Max-Planck Institute for evolutionary Anthropology; Friedrich-Schiller-University Jena) - Schiffels, Stephan (Max-Planck Institute for evolutionary Anthropology)

Abstract format: Oral

The transition from late antiquity to the early medieval period in central Europe has long been a research focus in historical and archaeological sciences. Particularly, whether the observed political and cultural changes are accompanied by demographic changes, remains elusive. Here, we study ancient DNA from multiple cemeteries in the Rhineland spanning the period from 300 to 800 AD, including the transition point at 450 AD. We analyse burials from late Roman military contexts, Bonn and Jülich, and those from local population cemeteries, especially Alt-Inden. We benefit from precise archaeological dating to correlate our genetic results and view them as a high-resolution time-series in the time span before and after 450 AD.

First, we find evidence of different ancestry backgrounds between the legionary camps, suggesting that the camps were comprised of people from a similar region, but this origin was different between the two sites. Second we observe signals of ancestry shifts through time in both the legionary burials as well as the local cemeteries, which we interpret as the result of migration into the region. Last, we find haplotype sharing indicative of close familial relationships between Jülich and Alt-Inden, whereas the individuals from Bonn show no relatedness to any other site that we studied. In conclusion, our study provides a new high resolution temporal and spatial insight into the demographic patterns of the transition time between late antiquity and early middle ages in the Rhine region.

5 OLD SAMPLES, NEW ISSUES: EDUCATIONAL COMPASS FOR PALEOGENETIC CAREERS

Abstract author(s): Franicevic-Joyce, Nicole (University of Mostar)

Abstract format: Oral

Recent technological progress in ancient genetics has largely impacted the quality of studies and transformed the availability of research funds and research resources. However, a clear educational path leading to academic positions in paleogenetics is still in its infancy and extends to a scientific minority. This presentation will first provide a brief introduction to the current state of the field of ancient DNA (aDNA) to include the latest changes in the technologies used. Secondly, it will discuss challenges in research, such as training, data authentication, and sample preservation.

Thirdly, it will analyse the structural difference in training between the fields of bioinformatics, genetics, and archaeology that potentially impacts DNA research and career progress. Finally, it will explore alternative educational routes into the field and necessary strategies for successful collaborations such as support of the sovereignty of data, new collaborative venues, and empowerment of current educational programmes. The findings add to our current knowledge of the complexities of palaeogenetic careers that underpin a new era of archaeology research.

A. AN EFFECTIVE PIPELINE FOR ANCIENT DNA ANALYSIS OF THE HUMAN ORAL MICROBIOME

Abstract author(s): Standeven, Francesca - Dahlquist-Axe, Gwyn (University of Bradford) - Speller, Camilla (University of British Columbia) - Meehan, Conor (Nottingham Trent University) - Tedder, Andrew (University of Bradford)

Abstract format: Poster

Dental calculus (mineralised dental plaque) is regarded a valuable reservoir of ancient DNA (aDNA) and has the potential to give insights on a variety of archaeological topics including diet, disease, migratory patterns, culture, and gender studies. In recent years, metagenomic sequencing has been used to identify diverse microbial communities entrapped in dental calculus, allowing for extensive investigations into ancient diet and disease inferred from oral microbiomes spanning different historical periods and geographies. However, due to the complex nature of aDNA, such as extensive fragmentation, degradation, and contamination, the recovery of full metagenomic assembled genomes remains problematic. Furthermore, many archaeologists who may examine the ancient oral cavity on a macroscopic level are not well versed in the bioinformatics tools required for metagenomic aDNA analysis. Therefore, this study uses a dataset of 155 metagenomic samples from archaeological dental calculus sequenced using short-read technology spanning over 5000-years (across the Bronze/Iron Age, Roman Period, Viking Age, Anglo-Saxon Period, Medieval Period, Industrial Age, and modern day) to evaluate and construct a user-friendly, efficient workflow for ancient human oral microbiome analysis. The runtime, computational resources, ease of use and accuracy of results are all considered to ensure such a pipeline can be widely used by researchers in the field of archaeological science.

B. USING ANCIENT DNA TO INVESTIGATE THE IMPACT OF THE INDUSTRIAL REVOLUTION ON HUMAN ORAL MICROBIOME COMMUNITIES

Abstract author(s): Dahlquist-Axe, Gwyn - Standeven, Francesca (University of Bradford) - Speller, Camilla (University of British Columbia) - Tedder, Andrew (University of Bradford) - Meehan, Conor (Nottingham Trent University)

Abstract format: Poster

The Industrial Revolution marked a period of change to many aspects of human life, such as to migration patterns, subsistence strategies, recreational activities, and habitation patterns. Investigation of ancient DNA can lend insight to the effect of these changes on human health. The human microbiome has been recognized as closely linked to many aspects of human health, from dental disease to cancer. The oral microbiome in particular is heavily influenced by diet, disease, and daily habits.

In this project we use samples of ancient DNA obtained from the dental plaque of 134 ancient individuals from across England dating from the Iron Age until the post-Medieval Era to look at the impact of changes to dietary resources and population demographics on the oral microbiome. Specifically, we compare the abundances of different bacteria, particularly pathogens, before and after the Industrial Revolution, which brought an increase in pollution and availability of sugar and processed foods through trade and industrial innovation. Existing studies investigating the effects of the Industrial Revolution on human oral microbiomes in Europe generally include limited sample sizes that may mask correlations between specific lifestyle factors and changes in the oral microbiome. However, our findings show differences in alpha and beta diversity of the oral microbiome community about this time period, likely due to these sweeping changes in British culture and environment.

C. A MOLECULAR AND SPECTROMETRIC APPROACH FOR TRACING THE ORIGIN OF ANCIENT IVORY

Abstract author(s): Costa, Marina (HERCULES Laboratory & Chemistry and Biochemistry Department of Science and Technology School, University of Évora; MED – Mediterranean Institute for Agriculture, Environment and Development & CHANGE – Global Change and Sustainability Institute, Institute for Advanced Studies and Research, University of Évora; INIAV, National Institute of Agricultural and Veterinary Research) - Vicente, Cláudia (MED – Mediterranean Institute for Agriculture, Environment and Development & CHANGE – Global Change and Sustainability Institute, Institute for Advanced Studies and Research, University of Évora; INIAV, National Institute of Agricultural and Veterinary Research) - Espada, Margarida (MED – Mediterranean Institute for Agriculture, Environment and Development & CHANGE – Global Change and Sustainability Institute, Institute for Advanced Studies and Research, University of Évora) - Faria, Jorge (INIAV, National Institute of Agricultural and Veterinary Research; MED – Mediterranean Institute for Agriculture, Environment and Development & CHANGE – Global Change and Sustainability Institute, Institute for Advanced Studies and Research, University of Évora) - Teixeira, Jorge (HERCULES Laboratory & Chemistry and Biochemistry Department of Science and Technology School, University of Évora) - Bettencourt, José (CHAM–Center for the Humanities and History Department, -Universidade Nova de Lisboa) - Teixeira, Dora (HERCULES Laboratory & Chemistry and Biochemistry Department of Science and Technology School, University of Évora)

Abstract format: Poster

The remains recovered from ancient shipwrecks are a unique cultural, historical and archaeological heritage. The Horta Bay shipwreck (site BH-001), located at Faial Island, Azores archipelago, Portugal, was partially excavated between 2008 and 2012 and became of particular interest to scientists due to the quantity and diversity of artefacts recovered, with special emphasis to a vast elephant tusks collection of unknown origin. Named as “Ivory’s Shipwreck,” a preliminary study of the artefacts suggests that it was a merchant ship operating in the Atlantic in the early eighteenth century, with possible English origin. This assumption needs to be supported by a full study of these rare items, resorting to a modern multi-analytical approach.

The analysis of artefacts through advanced analytical chemistry and molecular biology techniques may provide information about the geographical origin of the ship, the route, its cargo, and a better understanding of the strategic importance of the Port of Horta in the 17th and 18th centuries.

The artefacts recovered from the BH-001 site cover a wide variety of materials and an extraordinary collection of about one hundred ivory elephant tusks. The material analysis of these samples can provide information about the Asian or African origin of the elephants. Although the African source of the BH-001 ivory cargo is the most probable, analytical confirmation would provide higher reliability.

In this work, we present the preliminary results obtained from the BH-001 archaeological site, using DNA-based methods for species identification (mitochondrial DNA barcoding) and spectroscopic methods, like Fourier transform infrared spectroscopy (FTIR) and X-ray Fluorescence (XRF). Important information was obtained for elephant species identification by optimizing DNA extraction methods, however, data confirmation must be performed using a larger number of samples from the “Ivory’s Shipwreck” cargo and, if possible, samples obtained from other wrecks of the same chronological period.

242 FORGOTTEN BODIES, INVISIBLE HISTORIES: ADDRESSING OVERLOOKED HUMAN NARRATIVES IN THE ARCHAEOLOGICAL RECORD

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Casna, Maia - Hall, Rachael (Leiden University) - Jackson, Veronica (Vrije Universiteit Brussel) - Sandoval, Elena (University of Bristol) - Tutwiler, Alex (Leiden University)

Session format: Regular session

Over the last few decades, several conceptual, epistemological, and philosophical advances have permeated archaeological practice and theory, bringing to light the fact that, despite our best efforts, much of human history remains undiscovered. While several of our limitations in the understanding of the human past are often caused by issues such as preservation, under-representation in archaeological assemblages, and lack of funding, many others can be attributed to investigator biases shaped by popular ideas and stereotypes built around our vision of the past.

Following this, many archaeologists have been actively working to expand on those previously overlooked narratives, such as the study of women and children, economic inequality and social marginalization. The result of such efforts is that our present understanding of the past is more detailed, complete, and accurate than ever before. Yet, while some narratives are now commonly explored by archaeologists (e.g., gender, children, socioeconomic disparities), many

others (such as the experience of those with intersex conditions, disabilities, mental health conditions, etc.) remain unexplored, invisible to our records.

This session aims to reflect on our approach to the past, and move towards a more diverse and inclusive understanding of our human history by exploring invisible peoples, as well as the embodiment of their lived experiences. We invite papers investigating innovative approaches to address invisible people in archaeology, with the aim of discussing future steps in the exploration of how our discipline can identify and analyze diverse narratives. We welcome archaeologists, anthropologists, historians, and other scholars to partake in a multidisciplinary dialogue on untold histories and invisible people.

ABSTRACTS

1 STORYBUILDING THROUGH TRADITIONAL AND INNOVATIVE ANALYSIS TECHNIQUES: EXCAVATIONS AT RANELAGH, CO. ROSCOMMON, IRELAND

Abstract author(s): Jones, Martin (Transport Infrastructure Ireland)

Abstract format: Oral

For centuries, excavation and the physical examination and interpretation of excavated material were the archaeologist's primary source of information. In recent decades, however, innovative scientific analysis techniques have emerged which allow the archaeologist to delve deeper into the everyday lives of communities, families, and individuals.

In 2015, as part of routine activity in advance of road construction, archaeological excavations revealed a previously unknown early medieval complex in Ranelagh, just north of Roscommon town, in the northwest of Ireland. The Ranelagh site was established around 450 CE as a simple, modestly sized defended farmstead which, for more than a millennium, underwent several phases of modification and expansion and eventually comprised an enclosed multi-generational cemetery, a livestock-rearing and processing centre, and a workshop for the manufacture of tools, weapons, and jewellery. By the late 1700s, any folk memory or historical record of this substantial site was erased or lost, and its presence had been entirely forgotten.

This paper focuses on several case studies from the expansive cemetery at the Ranelagh site. By weaving narratives suggested by the traditional examination of the human remains with those indicated by techniques such as aDNA and isotopic analysis it is possible to reveal previously unknowable details which those more traditional methods could not hope to on their own. These details expand not just the story of the Ranelagh site, but that of its heretofore invisible inhabitants as a group, and as individuals. These stories reveal the sometimes-diverse makeup of later prehistoric and early historic communities in Ireland and the bonds of kinship which extended beyond life and transcended modern conceptions of family.

2 FINDING "OTHERS" AND THE INDIVIDUAL IN THE AEGEAN BRONZE AGE

Abstract author(s): German, Senta (Montclair State University) - Simandiraki-Grimshaw, Anna (Museum of London Archaeology)

Abstract format: Oral

The overwhelming focus of archaeologists and historians working in the Aegean Bronze Age has been on the rise and fall of elite groups and networks. Because of this, very little has been revealed which concerns "normal" people and even less on slave or economically impoverished populations. Almost entirely absent are narratives of individual lives or experience. The proposed paper seeks to seed a "history from below" or Alltagsgeschichte approach in the field of Aegean prehistory and

perhaps establish a model which could be used in other historical fields. We begin with a brief historiographical overview of how elites and their political and economic networks have dominated the field and then argue for the usefulness of alternative investigatory models. Specifically, we will show how leveraging discrete assemblages, cross disciplinary and somatic approaches to focus on micro histories gets at individual life ways and experiences. Lastly, we discuss how emerging,

promising research can cause a methodological shift in approach. By focusing on aspects of the daily lives of non-elite people, including their struggles, practices, beliefs, values and mentalities, it is possible to explore individual agency and to highlight the complexity of their lived experience.

3 BEAUTY AND THE RECONSTRUCTED BODY: COUNTERING THE HOLLYWOOD EFFECT IN REPRESENTATIONS OF PAST PEOPLE

Abstract author(s): Hanson, Rosemary (Unaffiliated)

Abstract format: Oral

For all that archeology is working to incorporate a greater diversity of voices and perspectives into the way the past is written, visual reconstructions of past people remain remarkably conventional. The “standard” of human representation still leans towards slim figures, able bodies, hale complexions (even in death), prescriptive gender expressions, symmetrical unmarked faces, and an overall consistency with modern western beauty standards. Rare are the representations of disability, limb difference or loss, or facial difference. Rare too are variations in weight, gender presentation, heartiness, and signs of aging. The visual past seems too often to be peopled directly out of central casting. But what happens when we make reconstructions that resist this “beautification,” centering instead a more expansive range of bodies?

This project presents a series of simple reconstructions of Nordic objects, produced to center a variety of body types and presentations in archeological image production. Illustrating against the conservative representational trend reveals the pervasive hegemony in our representations of past people and the ways in which modern western beauty standards have been adopted as a “neutral” standard of representation. Thus, this illustration practice is not an errand in token inclusivity, but instead a visual exploration of the deeply ingrained biases that frame how we imagine the past: from Kantian notions of moral beauty to the undercurrents of white supremacy, ablism, and fatphobia. As such, this project seeks to demonstrate the value of illustrative practice within archeology as a tool of engagement, exploration, and resistance; imaging a past that is both more inclusive and more grounded in realism.

4 DIVERSIFYING RECONSTRUCTED IMAGES OF THE PAST - CURRENT EXAMPLES AND CHALLENGES

Abstract author(s): Matias, Jo Zalea (City Colleges of Chicago) - Annis, Karissa (Savannah College of Art & Design, University of Wisconsin-Milwaukee) - Scheyhing, Nicola (Independent Researcher) - Gutmiedl-Schumann, Doris (Universität der Bundeswehr München, Department of Social Sciences and Public Affairs, Historical Institute)

Abstract format: Oral

With the intensifying impact of aDNA research on the investigation of past migration, diseases, and physical appearance of past individuals, our knowledge of how past societies were composed and how their individual members may have looked have changed. Museums and institutions producing visual representations of such societies face new challenges in how they present individuals and past societies to their audiences, and how to deal with possible backlash.

In our contribution, we want to discuss recent examples of new, more diverse images that replaced older ones, and how the audience as well as the wider public reacted to them. We also want to discuss what museums in particular and archaeological science communication in general might learn from it, and what the challenges are. These include accusations of “faking” results and “wokeism” mainly from right-conservative voices.

Furthermore, extra costs of re-evaluation of images and reconstructions have to be taken into account, as more museums struggle with less funding and higher costs.

Individual case studies give us information on what a person looked like. If that is not what is expected, it might be dismissed as just a single case. How do we deal with that?

Who decides if reconstructions are redone and on what base?

Does the way museums and institutions display past individuals influence the broader public, and what possibilities are there to measure their impact?

In our talk, we will also discuss actual examples of what museums and representing institutions/artists did/are doing and the reactions by the audience: for example, the reconstruction of the so-called Cheddar Man in 2018. (<http://nhm.ac.uk>, revisited 29.10.2022)

5 RE-DEFINING MIGRATION: A CASE STUDY OF THE UKS FIRST NATIONAL MIGRATION MUSEUM

Abstract author(s): Bereznyckyj, Amber (NorthEastern University - London; Head of Heritage - RealDreams Non-Profit)

Abstract format: Oral

The UKs first, national, migration museum is in Lewisham shopping centre, South London. It was created with the intention of changing the stigma around migration in the UK and in the wider heritage industry. Archaeologists have commonly perpetuated traditional authorised heritage discourse which often excludes migrant and working communities. Therefore, the Migration Museum was created as an inclusive and safe space for those within the society that usually feel unwelcomed in traditional institutions.

The Migration Museum uses its unorthodox location and life-like reconstructions of the 'British High-Street' in order to create immersive experiences. Visitors go through a process of self-recognition rather than a process of 'being in migrants shoes'. The Migration Museum therefore, re-defines what it means to be a migrant in the UK by personalising visitor experience to recognise ones own heritage. This in turn creates an open dialogue for honest discussion.

The Migration Museum's people focused approach prioritises the protection of intangible cultural heritage in order to maintain centres of physical heritage value (such as Banglatown in London). By analysing audience reactions concerning the Migration Museum on social media platforms, we know that community generation is one of the most important factors in maintaining these sites. We also know that visitor priorities have forthrightly changed Post-COVID and so must our institutions.

As archaeologist's, we could implement this innovative approach to re-defining marginalised groups to encourage more open dialogue. This means, opening up definitions for interpretation, protecting the spiritual and intangible value of archaeology sites and engaging with established marginalised communities.

6 EVIDENCE OF ABSENCE: A PRESENCE AND ABSENCE CASE STUDY OF EARLY NEOLITHIC HUMAN REMAINS NEAR STONEHENGE WORLD HERITAGE SITE

Abstract author(s): Ward, Kat (TBC)

Abstract format: Oral

Investigation and interpretation of Early Neolithic mortuary remains is the primary source for our understanding of Early Neolithic society and culture in Britain. Modern interpretation is founded on findings from increasingly more detailed application of emerging scientific methods to known mortuary assemblages, overwhelmingly derived from chambered tombs. However, these interpretations are based on only a small sample of sites and creates the mistaken impression that interpretations from monumental burial sites are representative of Early Neolithic society and culture.

To address this bias, a systematic review of all Early Neolithic features in Wiltshire was undertaken, leading to the conclusion that the majority of Early Neolithic populations are absent from the archaeological record, and therefore are not included in current interpretations. A new approach to studying Early Neolithic mortuary practices has been developed called a presence and absence study. A presence and absence case study was undertaken in the Stonehenge World Heritage Site and around Salisbury which demonstrates the breadth of modern large-scale archaeological investigation compared to known and recovered Early Neolithic features, especially those containing human remains.

This case study shows empirically for the first time that the lack of both extant Early Neolithic features and corresponding skeletal remains is genuine and that the majority of lived populations from this period are represented by the 'absent dead' – those not seen in the archaeological record. Possible mortuary practices applied to the absent dead are explored therefore reinserting them into interpretations of Early Neolithic mortuary practices. These findings demonstrate the exclusiveness of Early Neolithic monumental burials and suggests the assumption that they are representative of Early Neolithic society and culture should be seriously challenged.

7 WHEN ANCIENT UNIVERSITIES HAVE BURIALS ON THEIR PREMISES: THE EXAMPLE OF THE COLLEGE OF JESUS OF THE UNIVERSITY OF COIMBRA

Abstract author(s): Gabriel, Bruna (University of Coimbra, Centre for Functional Ecology, Laboratory of Forensic Anthropology; Department of Life Sciences) - Monge Calleja, Álvaro (University of Coimbra, Research Centre for Anthropology and Health - CIAS, Department of Life Sciences) - Filipe, Sónia - Dias, Gina (Rectory of the University of Coimbra) - Cunha, Eugénia (University of Coimbra, Centre for Functional Ecology, Laboratory of Forensic Anthropology; Department of Life Sciences)

Abstract format: Oral

Within the urban archaeological project carried out by the Rectory of the University of Coimbra, a bioarchaeological intervention was accomplished between 2021-2023 in one of the ancient colleges. Although the University was founded in 1290, the College of Jesus was built in the 16th century to house the Society of Jesus, and was later adapted as a university space, dedicated to teaching in the 18th century, within the Pombaline reform.

The burial spaces intervened were aligned and organized throughout the cloister deambulatory. Although single graves were initially expected, the reality achieved is entirely different.

Individuals of all age groups, from fetuses to older adults, were exhumed. In total, 16 adults (eight females, two males, and six indeterminate) and 17 non-adults individuals were recovered from four graves excavated directly into the ground, plus eight burial spaces. In these later ones, thousands of bones (c. 9500) were also collected from secondary deposits (ossuary and scattered bones), which significantly increase the minimum number of individuals (MNI).

Regarding bone pathologies, cases such as anencephaly, atherosclerosis, severe infections, and articular and non-articular degenerative diseases were found. Evidence of surgical practices (trepanations) and poorly consolidated fractures were also retrieved.

Together with the remaining results of the archaeological excavation carried out, these people, until recently “hidden” shows great and valuable historical significance, allowing a better understanding of life in Coimbra (Portugal), after the foundation of the College of Jesus, between Modern and the Contemporary Period.

8 **A BONE TO PICK: BIOARCHAEOLOGICAL AND OSTEOBIOGRAPHICAL APPROACHES FOR INTERPRETING ROMANO-BRITISH FRAGMENTATION AND DECAPITATION MORTUARY PRACTICES AND FUNERARY EXPERIENCES**

Abstract author(s): Christie, Shaheen (University of Wisconsin-Milwaukee)

Abstract format: Oral

Bioarchaeological and mortuary analyses of Late Roman period (3rd – 5th century CE) decapitation burials in Britain reveal in some cases a continuation of Late Iron Age (100 BCE – 43 CE) fragmentation rites and other mortuary behaviors, such as the scattering of human remains in settlements, ditches, caves and other isolated deposits. Many earlier studies of such burials have yielded, at times, opposing interpretations for the motivation behind the act of decapitation and the mortuary treatment of those individuals, even in those contexts that appeared similar on the surface. Traditional interpretations about the motivations behind such burials include human sacrifice, execution, trophy taking, fear of the dead, punishment of the dead, witchcraft, veneration, or “outsider” status – traditionally associated with negative connotations. Recent studies by Crerar (2012, 2016), Smith (2018), Tucker (2011, 2012, 2014, 2016), and Wiseman et al. (2021), among others, have concluded there were regional and more nuanced site-by-site variations in mortuary treatment between decapitation and non-decapitation burial populations in Britain and other parts of the Roman world. In order to further understand the nature of those complex mortuary contexts, this paper presents a bioarchaeological and mortuary analysis of 122 decapitation burials from 42 Late Roman period sites in Oxfordshire and Gloucestershire (UK), and shows complex variation in the application of the rite and burial treatment experiences of the dead. The aim is to use an osteobiographical approach to determine if those communities utilized specialized mortuary rituals toward decapitated individuals, whether those practices may be classified as normative, minority, or non-normative, and, whether those bodies served to construct distinguished identities in specific phases of the funerary structure in Late Roman society.

9 **CROSSING THE LINE. INFANT BURIALS IN SOUTHERN ITALY BETWEEN THE 4TH AND 8TH CENTURIES CE**

Abstract author(s): Tulumello, Giorgia (University of Pisa) - Cucinotta, Francesca (IRCCS Centro Neurolesi „Bonino-Pulejo“)

Abstract format: Oral

The study and interpretation of infant burials represents a challenge in the field of funerary archaeology. These individuals, frequently absent in the archaeological record due to several factors, are often condemned to invisibility. The purpose of this work is to investigate, from an archaeological and anthropological point of view, the infant burials from various funerary areas located in Southern Italy (Apulia, Basilicata, Calabria, and Sicily), dating between the 4th and 8th centuries CE. By comparing data from different geographical areas and with different chronologies, it was possible to assess that different funerary practices existed intended for non-adults of different age groups. In some cases, we observed the presence of exclusively infantile burial typologies. Moreover, the analysis of the grave goods in several contexts has revealed a tangible and appreciable care reserved for these inhumed. The study of anthropological data has highlighted how, in some sites, a distinction existed between individuals who died between 0 and 3 years of age and older ones. The analysis of the data has revealed a thin and invisible line between non-adults aged 0-3 and older ones, possibly mirroring some developmental milestones of human growth. The study of archaeological and anthropological data, contextually combined with the analysis of children’s global development, can shed new light on the social and ritual treatment reserved to infants in the ancient world.

10 **CHILDREN AT WORK: RE-ASSESSING CHILD LABOR DURING POST-MEDIEVAL (1650-1850 CE) DUTCH INDUSTRIALIZATION USING AN OSTEOARCHAEOLOGICAL APPROACH**

Abstract author(s): Tutwiler, Alex - Schats, Rachel (Leiden University)

Abstract format: Oral

Child labour has been a consistent factor in global economic systems for most of recorded human history. Most notably, the post-medieval (1650-1850) wave of industrialization seen across Europe brought with it an increase in both the frequency and inherent riskiness of child labour practices. Due to the rise of major industrial communities and the increased demand for goods, children began working to supplement the workforce and financially support their families, and the Netherlands was no exception to this. While broad general information on child labour is available in historical accounts, it is unclear how exactly the rise of industrialization impacted the lives of Dutch children during

this period. Moreover, very little is known about the variation in child labour practices between rural and urban communities with different economic focuses and how this impacted the growing skeleton.

By approaching this research question from an osteoarchaeological perspective, this study will delve into the ways in which it is possible to fill in the gaps left in the historical record regarding the lived experiences of children in the workforce. Employing osteological analysis will also provide a better understanding of the types of labour they engaged in that have not been well documented. This data, in conjunction with the historical accounts of child labour practices during this time period, will provide a more detailed account of how child labour practices played into industrialization in post-medieval Dutch communities. This talk will present a preliminary palaeopathological analysis of skeletal lesions related to strenuous physical activity in children and young adults from Arnhem, a post-medieval community with known industrial labour practices. By comparing these pathological indicators with historical accounts of industrialization in Arnhem, this discussion will demonstrate the advantages of incorporating osteoarchaeological analysis into the study of child labour practices in the past.

11 SEXING NON-ADULTS: A NEW NON-DESTRUCTIVE METHOD USING METRICS OF THE PERMANENT CANINES

Abstract author(s): Jackson, Veronica (Historical Research into Urban Transformation Processes, Vrije Universiteit Brussel; Multidisciplinary Archaeology Research Institute, Vrije Universiteit Brussel; Anatomical Research and Clinical Studies, Vrije Universiteit Brussel) - Veselka, Barbara (Analytical, Environmental & Geo-Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeology Research Institute, Vrije Universiteit Brussel) - Provyn, Steven (Anatomical Research and Clinical Studies, Vrije Universiteit Brussel) - Snoeck, Christophe (Analytical, Environmental & Geo-Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeology Research Institute, Vrije Universiteit Brussel) - Spros, Rachèl (Analytical, Environmental & Geo-Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeology Research Institute, Vrije Universiteit Brussel) - Burnett, Alexandra (ProGenTomics, Laboratory for Pharmaceutical Biotechnology, Faculty of Pharmaceutical Sciences, Ghent University; ArcheOs, Laboratory for Biological Anthropology, Faculty of Arts and Philosophy, Ghent University) - Palmer, Jessica (ArcheOs, Laboratory for Biological Anthropology, Faculty of Arts and Philosophy, Ghent University) - Daled, Simon (ProGenTomics, Laboratory for Pharmaceutical Biotechnology, Faculty of Pharmaceutical Sciences, Ghent University) - Lambert, Bart (Historical Research into Urban Transformation Processes, Vrije Universiteit Brussel)

Abstract format: Oral

Sex estimation of non-adult skeletal remains has long been an elusive goal within osteoarchaeology. While much progress has been made recently through destructive chemical analyses, a reliable technique that is non-destructive, inexpensive, and comparatively quick has yet to be established. This presentation outlines just such a method based on the crown and cervical dimensions of permanent canines, the most sexually dimorphic tooth in the human dentition. Using logistic regression on adult measurements, probability-of-group-membership equations are created using varying single measurements and measurement combinations. This facilitates maximal application where some measurement(s) may be unobservable in the non-adult individuals. The combination of resultant probabilities allows for a confident estimation of sex. Whether these equations are population- or regionally specific will be discussed.

Following a pilot study on a documented Dutch skeletal collection, the method was applied to the archaeological collection from Ypres, Belgium under study with the Make-Up of the City project. The accuracy of the results was tested using proteomics from tooth enamel and the method achieved accuracy rates well above accepted levels of accuracy in adult sex estimation. As little as one dimension may be used to estimate sex with an acceptable level of confidence. Although the application of this method relies on the presence of at least one permanent canine, when that condition is met the method can be applied to all non-adult individuals aged five years and above, as well as adult individuals whose state of preservation does not allow for morphometric sex estimation or whose morphological sex estimate is indeterminate. By providing reliable sex estimation in non-adult skeletal remains, this method greatly contributes to the field, enabling the refinement of osteological age estimation, growth studies, and pubertal timing and development, as well as more perceptive interpretations of the social, economic, or environmental implications of (bio)archaeological evidence.

12 DUDE LOOKS LIKE A LADY? - TRANSGENDER PEOPLE IN LIGHT OF THE MATERIAL CULTURE

Abstract author(s): Jaffe, Gali (Freelance Lecturer/Researcher)

Abstract format: Oral

While the Sex is a definition based on physical traits, Gender is based on a person's self-perception and the social structures surrounding them. This distinction is important and poses an additional layer of complexity when searching for Gender in the archaeological record.

This paper looks to identify trans and Queer people in the archaeological record through material culture and written evidence, presented through eyes of a Transwoman archaeologist.

Therefore, my aim in this paper is to show that, when we connect the existing archaeological evidence from different cultures and periods together, we find that an immense amount archaeological evidence already exists to support the claim that Trans and Queer people existed all throughout history.

I will, if so, show, beginning with 3rd millennium BC Mesopotamian priests called Gala who had feminine characteristics, through the dual-gendered grave goods of Hasanlu Tepe, and onto the Roman Period when Emperor Elagabalus, who is considered the world's first Transgender, lived and was possibly the first person in history to seek sexual reassignment surgery, that Transgender and Queer people have, without a doubt, existed all throughout history dating back at least 5000 years.

Essentially, this exploration considers how these individuals change our understanding of trans-people in the ancient world while exploring their existence within the socio-political context in which they lived.

13 **INVISIBLE BODIES: THE FORGOTTEN HISTORY OF CASTRATES**

Abstract author(s): Reusch, Kathryn (Metropolitan State University of Denver)

Abstract format: Oral

Castrates form a unique group of overlooked people in the archaeological and historical record. While a few occupied some of the highest positions possible in their societies, others barely had enough resources to survive. They were diverse groups of people ethnically, spiritually, and sociopolitically, while frequently also being geographically separated from their families and cultures. Their perceived gender difference gave them a liminal position in most societies, placing them into sometimes advantageous, but often highly prescribed social roles.

Castrates have been present in many hierarchical societies throughout Afro-Eurasia over the last six millennia, with several having the opportunity to change history and shape the world we live in today. Despite this, there is little understanding of them in the modern period. Most of the known history of castrates comes from (often highly critical) writings by intact male contemporaries. For most of recorded history, these disparaging writings influenced the perception of castrates, which determined who studied them and when they were studied for several centuries. There was a rush of medical and biological anthropology studies performed on castrates in the late 19th and early 20th centuries, which ended with the advent of the Second World War. Castrate studies have revived over the last few decades due to the different social and gender roles castrates filled in many societies, but many of these studies seem to forget the real, lived, embodied experience of these individuals. Modern bioarchaeological studies of castrates are beginning to bring disparate strands of evidence together to investigate the lived experiences of these overlooked individuals.

This paper will discuss the known history of castrates, merge the social and physical evidence of castrates that currently exists, lay out the current archaeological evidence, and explore potential areas of future research.

14 **METHODOLOGICAL APPROACHES TO THE STUDY OF INVISIBLE WOMEN OF PREDYNASTIC EGYPT**

Abstract author(s): Tamorri, Veronica (Leiden University)

Abstract format: Oral

Advances in gender studies over the last few decades, coupled with the development of more sophisticated methodological approaches in (bio)archaeology, have significantly fostered research on past women's lives. While this is generally the case for many geo-temporal contexts, women are noticeably underrepresented in narratives on the transition to complex society in 4th–3rd millennium BCE Nile Valley, compared to men. Crucially, this is not due to a lack of (bio)archaeological evidence, which is similar in quantity and quality for both sexes. Rather, it is the prevailing focus on Egypt's unification processes, traditionally considered from a male-centred perspective, that has prevented including wider social segments in the research agenda.

My current research project, aims to tackle this long-standing research gap on female individuals in pre-pharaonic Nile Valley via an interdisciplinary approach based on social bioarchaeology. Therefore, the first part of this presentation will illustrate the state-of-the-art in the field to date and suggest strategies to investigate the embodied life experiences of invisible women of the early Nile Valley. In this respect, I will argue that the combined use of methodologies such as the measurement of enthesal changes, paleopathology, dental health analysis (in view of diet) and archaeoethnology is key. In the second part of the presentation, I will discuss some of the preliminary results of the project on the health, nutrition, level of physical activity and burial rituals of the sampled female individuals.

15

A PRELIMINARY EXPLORATION OF THE ROLE OF WOMEN IN THE YAMNAYA HORIZON THROUGH A DIETARY LENS

Abstract author(s): Sandoval, Elena (University of Bristol)

Abstract format: Oral

Social positions of men and women in the past can be explored using dietary reconstruction. Variability in subsistence strategies across the sexes can indicate differences in the lived experience due to differences in dietary access. This approach has been applied to skeletal samples from the Yamnaya horizon, a major pastoralist phenomenon that swept through the Eurasian steppe from the east to the southwest at around 3000 BCE. Owing to the lack of permanent settlements, this horizon is characterized predominately by kurgan burials. It has been a long-accepted theory that the Yamnaya horizon was spearheaded by males, with females following in a highly gender stratified society. The kurgan burials were hypothesized to be reserved for high status males. The focus on a patriarchal societal model has resulted in much of the study and research of the Yamnaya horizon revolving around the male individuals ignoring the sizeable number of female individuals. This study attempts to bring the female narrative to the forefront by determining if the hypothesis of a strongly gendered society is plausible through a dietary lens, and in so doing, adds substantially to the little existing evidence on the lived experience of female Yamnaya. Of the current sample selection of 68 individuals from kurgans excavated throughout Bulgaria and Romania, 20% of the individuals are female, 59% are male, and 20% are unknown. The dietary practices of these 68 individuals of the Yamnaya horizon are reconstructed using bulk and compound-specific stable isotope analysis of human skeletal remains. The results of the isotopic values of these individuals are examined for statistically significant correlations to the sex to inform on differences in diet between males and females. Dietary differences, or the lack thereof, are then used to explore possible lifeways experienced by Yamnaya women.

16

THE LIFE STORY OF A DISABLED WOMAN, BURIED AT MUŠOV (MORAVIA, 6TH CENTURY CE) FROM THE PERSPECTIVE OF INTERDISCIPLINARY RESEARCH

Abstract author(s): Loskotová, Zuzana (Institut of Archaeology of the Czech Academy of Sciences) - Vaníčková, Eva (Moravian Museum) - Vargová, Lenka (Masaryk University, Department of Anatomy) - Vymazalová, Kateřina (Masaryk University, Department of Anatomy)

Abstract format: Oral

Human history was created not only by kings, warriors or „social elites“. Interdisciplinary cooperation in the field of history, archaeology, anthropology, paleopathology etc., enables a new perspective on the life stories of invisible peoples. A new excavations of the Institut of Archeology of the Czech Academy of Sciences; realized thanks to the project „Lombard population in Moravia. An interdisciplinary research into Migration Period necropolises.“ GA CR, led to the revelation of different members of contemporary communities, including women, children or people with some health disabilities. A special case is represented by the woman buried in the 6th century CE at Mušov, grave no. 48 (Moravia, CZ). According to the narrative of the archaeological sources (grave equipment), it is possible to guess, that this woman belonged to the common members of society; which also corresponds with anthropological assumption, that she maybe gave birth to one, but probably to more children. On the other side a detailed paleopathological analysis of the female skeleton from grave no. 48 revealed several pathological changes that had to significantly reduce the quality of life of this female. She probably had long-term headaches, back pain and, after an injury to the humerus also arthrosis in her left shoulder joint and partially paralyzed left upper limb. It is very likely that, due to her health condition, she required at least partial help from her surroundings in certain situations. Various kinds of other natural-science analyses were carried out, such as anthropological reconstruction of the appearance, isotopic analyses, radiocarbon dating etc. All these puzzles put together an interesting picture. The main aim of the paper is to present the life story of this woman as a model example of an interdisciplinary approach to the research of population of the Migration Period and the Early Middle Ages.

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NATURE'S BOUNTY: THE ROLE OF GATHERED WILD RESOURCES IN PAST SUBSISTENCE [ARCHWILD]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Mooney, Dawn Elise (University of Stavanger) - Prado, Shalen (McMaster University) - Guðmundsdóttir, Lísabet (Institute of Archaeology, Iceland)

Session format: Regular session

Foraging has become mainstream over the last decade, with many people supplementing their diet with wild gathered foods. Archaeologists, however, have been less engaged with the use of gathered resources, especially in agrarian societies. Nonetheless, in many past societies agriculture, gathering, hunting and fishing all contributed to a varied

subsistence base, engendering patterns of seasonal movement even within “sedentary” societies. Gathered resources were also not only used for foods: fuels, fibres, dyes and pigments, and medicines were also among the resources collected from the hinterlands. However, gathering can be difficult to prove in the archaeological record: without clear practices of butchery, hunting tools, or the collection of seeds for consumption or sowing, evidence of wild resources can seem ephemeral at best. How do we prove that deadwood or driftwood was used as fuel rather than fresh wood? How do we identify the consumption of foods like seaweed and fungi? How do we know if shellfish were collected as food or for use as bait? How can we identify the use of non-grain-based alcohols, such as mead or berry wine? What evidence might we find for the collection and use of feathers and down? This session invites contributions which help us to glimpse these kinds of practices in the archaeological record, using both direct and indirect evidence. Papers and posters might showcase the use of new methods, or new applications of established methods. Contributions from all regions and periods are invited, however we will prioritise those exploring gathered wild resource use in agrarian societies. We also welcome contributions presenting ethnographic or ethnohistorical evidence that might inspire us to think about archaeological traces of gathered resource use in new ways.

ABSTRACTS

1 ‘REWILDING’ LATER PREHISTORIC BRITAIN: HUNTING AND GATHERING ‘BIG DATA’ ON PREHISTORIC ENTANGLEMENTS WITH WILDLIFE

Abstract author(s): Roushannafas, Tina - Cooper, Anwen (Oxford Archaeology)

Abstract format: Oral

Developer-funded ‘rescue archaeology’ continues to generate tremendous amounts of archaeological data, with routine sampling meaning that increasingly abundant (and often diverse, despite repeated standardisation initiatives) paleoenvironmental records are now being gathered. There is considerable potential for this ‘big data’ to shed light on the role of wild plants and animals in prehistoric subsistence. However, pressures of time and cost mean that wider synthetic research that engages with this material is less common than desirable. Furthermore, current data management practices mean that assembling these records is also often challenging.

This paper presents the ‘Rewilding’ Later Prehistory’ project’s approach to exploring human-wildlife entanglements in prehistory through a new mode of industry-led research and a survey of environmental archaeologists addressing approaches to recording and interpreting wild plant and vertebrate remains. Future plans to develop an ‘OASIS+’ module with the Archaeological Data Service will further aim to link up the often disjointed paleoenvironmental data held across different regional historic environment records. The initial results of this approach are presented through insights gleaned on Bronze and Iron Age interaction with wild plants and animals in the Upper Thames Valley of south-central England, one of several British case studies examined by the project. Here we seek to focus on engagement with wildlife as inextricably woven into prehistoric lifeways, as opposed to a tendency to present nature as a waning backdrop upon which humans imposed order through farming and domestication.

2 DOCUMENTING THE USE OF WILD PLANT AND ANIMAL FOODS DURING THE ROMAN IMPERIAL PERIOD AT THE VADA VOLATERRANA SITE

Abstract author(s): Carmody, Stephen (Troy University) - Menchelli, Simonetta - Sangriso, Paolo - Marini, Silvia - Marcheschi, Rocco - Belcari, Domingo (University of Pisa) - Carmody, Lydia (Troy University Archaeology Research Center) - Kennedy, Emily (Troy University)

Abstract format: Oral

Vada Volaterrana was the harbor system of the Etruscan city of Volterra. In imperial times it included a system of docks, pottery factories, and farms spreading across the coastal plain between the Fine and the Cecina rivers, having its main center in the area occupied by the modern-day small town of Vada (Municipality of Rosignano M.mo, Province of Livorno). Beginning in the 1980s, excavations conducted by the University of Pisa have revealed approximately a quarter of the harbor system at the San Gaetano site. It was built during the Augustan age and later abandoned in the late 7th century AD.

In 2015, a GPR survey identified structures in the southern sector of the site. Between the end of the 1st and the beginning of the 2nd c. AD, a large rectangular building comprised of seven rooms was built. At the beginning of the 3rd c. AD more rooms were added that included a large apsed wall. Rich decoration suggests the importance of this room, which possibly functioned as a meeting hall.

In the summer of 2019, a collaborative project between the University of Pisa and Troy University began focused on detailing the foodways of the site’s inhabitants. Flotation samples were collected from multiple rooms, different occupational sequences, and inside and outside the structures to detail changing subsistence strategies over time and across space. In the paper, we detail our preliminary results that include multiple species of wild animals including

rabbit, bird, and fish, and wild plant foods including nuts and fruits, and discuss how these resources were included into and supplemented an agricultural diet. We then use this data to describe the day-to-day life and subsistence activities focusing on the wild resources used by the men, women, and children that occupied the site.

3 TREE BAST, CORDAGE, KNOTS, NETS – SKILLFUL ARTISANS OF THE STONE AGE

Abstract author(s): Suomela, Jenni (University of Helsinki, Department of Education / Craft studies) - Lempiäinen-Avci, Mia (University of Turku, Biodiversity Unit) - Koivisto, Satu (University of Turku, Archaeology)

Abstract format: Oral

Research on Stone Age hunter-fisher-gatherers in northern Fennoscandia has largely focused on durable archaeological materials such as lithics, burnt bones, charred plant remains and pottery recovered from dryland contexts where organics have already degraded. We know regrettably little about the organic material culture, skills and crafting methods of Stone Age artisans in northern Fennoscandia.

This presentation focuses on tree bast fibre materials and discusses the manufacturing of fishing nets at the Neolithic lake settlement of Järvensuo 1 (c. 6000-2000 BC), in Finland. This wetland site provides numerous well-preserved organics, such as artefacts made of wood and bark, as well as fishnet fragments and sinker stones with remains of tree bast cordage. Järvensuo 1 is a rare example of a systematically studied wetland site in the north, where archaeological fieldwork is still mainly focused on dryland areas. In the eastern Baltic, few similar wetland sites with comparable materials are known. Identification of the tree bast fibre materials was conducted through microscopy and based on reference materials. The potential range of locally available tree bast materials was identified with the aid of macrofossil analysis. Accordingly, *Tilia*, *Salix* and *Populus* are the probable candidates for the bast material used in the Neolithic fishing-gear.

The tradition of tree bast cordage making continued in Finland until the 20th century. By combining micro-level knowledge from the incredible knots from Järvensuo 1 with ethnographic survey data, we can get a bit closer to understanding the advanced craftsmanship they possessed already in the Neolithic.

4 THE MANIFOLD USES OF GATHERED SEAWEEDS: DATA FROM THE ARCHAEOLOGICAL RECORD OF THE ATACAMA DESERT COAST

Abstract author(s): Power, Ximena (Universidad Católica del Norte, Instituto de Investigaciones Arqueológicas) - Sitzia, Luca (Universidad de Tarapacá, Departamento de Antropología; Laboratorio de Análisis e Investigaciones Arqueométricas) - Zurro, Debora (HUMANE Research Group. Institució Milà i Fontanals de Investigació en Humanidades- Consejo Superior de Investigaciones Científicas - IMF-CSIC) - Silva, Claudia (Museo de Historia Natural de Concepción) - Borie, César (Universidad Católica del Norte, Instituto de Investigaciones Arqueológicas)

Abstract format: Oral

The hyperarid coast of the Atacama Desert is one of the few areas worldwide with outstanding macroscopic evidence of archaeological seaweed. Nevertheless, the relevance of these wild aquatic resources in local coastal communities has yet to be discussed. This work provides the first synthesis of the archaeo-phycological record of the Atacama Desert coast to evaluate the long-term uses of seaweed along the seashore of the American South Pacific. The unusual conditions of preservation of organic remains in this coastal desert provide direct evidence of two genera of kelp-type seaweed (*Lessonia* and *Macrocystis*) in at least 23 archaeological contexts. These data allow us to record the uses of kelps as raw material for cordage, personal objects, mortuary offerings, artificial mummification practices, and mortars for architectural features. We also synthesize the preliminary results of an archaeometric research program showing the profuse use of kelp-type seaweed as fuel by local hunter-gatherer-fishers from ca. 5.500 cal. BP to the 20th century. Finally, we discuss the results concerning ethnohistoric and ethnographic sources from the American South Pacific coast. The study of different lines of evidence suggests that conspicuous kelp-type seaweeds, locally named “huiros,” were not gathered for food requirements but for a wide range of technological purposes involved in the daily and ritual life of the desert coastal communities.

5 WHERE ARE THE PINECONES? TAPHONOMY OF ARCHAEOBOTANICAL REMAINS OF PINUS SP IN THE IBERIAN PENINSULA IN PREHISTORY

Abstract author(s): Garay Palacios, Blanca - Berihuete-Azorín, Marian (Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA; Department of Prehistory, Autonomous University of Barcelona - UAB)

Abstract format: Oral

Thanks to increasingly widespread archaeobotanical sampling and analysis, a great quantity of *Pinus* sp. remains have been recovered at archaeological sites from the Iberian Peninsula, dating from as early as the Palaeolithic. However, this growing corpus of information is biased towards one kind of materials: the wood charcoal.

Several *Pinus* species produce edible seeds. As is the case with other wild resources, pine nuts are often consumed raw and they require only minimal processing, which decreases the chances of archaeological recovery. Moreover, the high amount of oil contained by pine nuts makes their preservation by carbonization even more complicated. On the other hand, the low proportion of pinecone scales and pine nut shells in relation to wood charcoal seems odd. Therefore, it is not possible to have a good knowledge of the distribution and use of the carpological remains of *Pinus* by prehistoric human groups.

By means of a series of controlled charring experiments, this study aims to obtain a detailed picture of how this process affects the different parts (wood, pine scales, pine nut shells and pine nuts) of the main Iberian *Pinus* species. The goal is to assess the role of taphonomy on the differential preservation of the different parts, and to rule out (or not) human agency.

6 EVIDENCE FOR THE GATHERING AND USES OF BROWN PUFFBALL AND WILLOW AT A SCOTTISH IRON AGE WETLAND SETTLEMENT

Abstract author(s): Robertson, Jackaline (AOC Archaeology)

Abstract format: Oral

Most of the Iron Age archaeobotanical assemblages studied in Scotland are largely dominated by the presence of carbonised food remains such as cereal crops and hazelnut shells. Rarely is it possible to confidently identify any surviving evidence for the foraging of wild plant resources which have been used for other than a food resource.

The excavation at Black Loch of Myrton, Dumfries and Galloway uncovered a wetland settlement of six roundhouses from which a large and varied waterlogged and carbonised macroplant assemblage was recovered. The settlement practised a typical small scale subsistence economy based on the cultivation of cereal crops, but they also gathered a wide range of wild resources, some of which were probably used for specific purposes.

There is clear evidence that large caches of brown puffballs were gathered from the surrounding landscape and intentionally stored within two of the roundhouses; we argue that these might have been used as fire starters and possibly for their medical properties. Willow leaves were also intentionally brought to the settlement and these too were perhaps used as a medicine. By studying the wild species present, the quantities in which they were recovered and their spatial deposition within the settlement has allowed us to more confidently understand the valuable role the brown puffballs and willow had at Black Loch. Analysis of the Black Loch macroplant assemblage clearly demonstrates this community were willing to gather a wide range of wild resources from their surrounding landscape which they skilfully employed within their daily lives.

7 WILD PLANTS AND MONASTIC MEDICINE IN MEDIEVAL NORWAY

Abstract author(s): Blakeney, Rebecca (Natural History Museum, University of Oslo)

Abstract format: Oral

In this project we seek evidence for medicinal plant species from Nordic medieval monastic sites via a multi-proxy approach, including the recovery of macrobotanicals, pollen and sedimentary ancient DNA. As it is often difficult to pinpoint clear archaeological evidence of medicinal plant use, we have chosen monasteries as known locations for physical and spiritual healing in the Middle Ages, being destinations of pilgrimage and having been equipped with infirmaries and infirmary gardens. Research on medieval medicine provides opportunities to discuss ontological differences in perceptions of plant 'use' and 'medicine', as well as distinctions between 'wild' and 'cultivated' species in agrarian societies. Medicinal plants may have been gathered from 'wild' populations outside of the monastic complex, or ruderal species may have been encouraged to grow nearby, perhaps even within monastic gardens. We conducted targeted excavation and sampling at two sites in Norway, following the results of ground-penetrating radar surveys: a drain feature at Hovedøya Kloster in the Oslofjord and a garden feature on the site of Reins Kloster in Trøndelag, and both sites yielded medieval plant remains. Archaeological methods have been supplemented by information from local vegetation surveys and documentary sources on medieval medicine. While this research aims primarily to identify medicinal plant species, it also contributes to interdisciplinary research questions relating to Norway's plant biodiversity, as well as understandings of diet, health and medicine at Norway's medieval monasteries.

8 GETTING RID OF THE DEAD WOOD? EVIDENCE FOR DECAY IN CHARCOAL ASSEMBLAGES FROM NORWAY

Abstract author(s): Mooney, Dawn Elise (University of Stavanger)

Abstract format: Oral

We often imagine Scandinavia as being covered with dense forests, with no shortage of wood for any purpose. While this is to some extent true for much of the region, there are local variations: many coastal regions in western Norway were essentially deforested in the Neolithic and Bronze Age, and coastal northern Norway has never had any

significant tree cover. In northern Norway, driftwood was often used for fuel where it was available, but further south communities would have had to find different solutions to access firewood and timber. This will often have involved logistical arrangements: travelling to forest areas, trading, and/or managing fragmented local woodlands. However, there is mounting evidence that dead wood also played a role in these systems. We know that in Iceland, famous for its limited wood resources, there were laws governing the collection of dead wood from at least the Medieval period, and it is likely that similar customs were present in Norway. This paper presents evidence for decay and infestation in charcoal assemblages from western and northern Norway, mostly in the form of traces of wood-boring insects. The remains of domestic, industrial and ritual fuel woods from Iron Age and Medieval sites will be examined in order to explore trends in fuel acquisition strategies. So far, there has been very little research on charcoal assemblages from Norway, but this presentation showcases their potential while also inviting suggestions for future research avenues and applications of analytical techniques.

247 ENCOUNTERS AND TRANSFORMATIONS ON THE BORDERS OF THE ROMAN EMPIRE: FROM THE LATE IRON AGE TO LATE ANTIQUITY

Session theme: 6. Contested Pasts & Presents

Session organisers: Fernández-Götz, Manuel (University of Edinburgh) - Mihajlovic, Vladimir (University of Novi Sad)

Session format: Regular session

What was the impact of the Roman Empire on societies located at its borders? How did interactions change over time and space, and to what extent did life differ for communities located in the immediate inner vs. outside hinterlands of the frontier? These and other related questions have been at the heart of Late Iron Age and Roman studies for a long time, but can now be re-evaluated in light of new archaeological evidence as well as novel theoretical and methodological approaches. Development-led archaeology has significantly increased the corpus of available information in many regions, whereas increased chronological accuracy is proving crucial for obtaining higher-resolution insights into the transformations that took place before, during, and after the integration of territories into the Roman state. Isotopic and aDNA studies, for their part, are revolutionising our knowledge of aspects such as diet, health, and mobility within and outside the political borders of the Empire. Conceptually, the growing influence of perspectives derived from globalisation studies and postcolonial and decolonial theories is changing the way in which many scholars are interpreting the evidence, particularly in relation to the indigenous side of the story. In this session, we invite papers that address the topic of encounters and transformations along the border regions of the Roman Empire. Chronologically, the scope of the session extends from the 2nd century BC to the 5th century AD. Our aim is to bring together papers that address the situation in specific case studies and others that take wider, comparative perspectives.

ABSTRACTS

1 COMPARATIVE BORDERLANDS STUDIES FROM ARBEIA TO THE ALAMO

Abstract author(s): Gardner, Andrew (UCL Institute of Archaeology)

Abstract format: Oral

The field of border studies emerged in parallel with a backlash against globalisation in the early 2000s. That backlash took a variety of forms, economic, cultural and political, and it has had some disturbing consequences in the last few years, but it does speak to a recognition that human societies frequently seem to exist in a space of tension between connectivity and division. The Roman Empire is no different, in this respect, and increasingly scholarship within Roman archaeology also shifts from the globalisation turn to a border turn. This promises a welcome reintegration of the sub-fields of frontier and provincial archaeology and the more 'classical' tradition, and it also invites a new generation of comparisons between Roman and more recent forms of imperialism, which in turn still shape the world of today. In this paper, two axes of comparison will be considered to address these two ways of using borderlands to integrate Roman archaeology in new contexts: the role of three different frontiers in shaping Roman Britain, and the larger-scale legacies of frontiers in the Roman and Spanish empires.

2 RESILIENCE AND TRANSFORMATIONS IN THE IBERIAN ICONOGRAPHIC NARRATIVES OF THE UPPER GUADALQUIVIR (SPAIN) AFTER THE SECOND PUNIC WAR

Abstract author(s): Moreno Padilla, María Isabel (Instituto de Investigación en Arqueología Ibérica. Universidad de Jaén)

Abstract format: Oral

Iconography constitutes one of the most complex means of expressing identities and social realities in Antiquity. The images, heterogeneous and diverse, complex and multifunctional, legitimize the ideological structure while stimulating the mechanisms of social reproduction. In this paper, we propose an analysis of the iconography that developed after the end of the Second Punic War in the Upper Guadalquivir (Spain). Specifically, our study focuses on the material variability, on the scenarios where these objects were displayed, and on the phenomena of interaction, identity and memory derived from their use in a context marked by the conflict aftermaths, in a chronological framework comprised between the end of the 3rd century BC and the 1st century AD.

Our proposal emphasises the indigenous side of a period marked by the implementation of the Roman territorial structure. In addition, this approach seeks to incorporate other types of social readings into the general framework of the Archeology of the Conflict. We aim at understanding the impact of war on local communities, with a special interest in those elements that contribute to rebuilding community (and identity) in a context marked by the disintegration of Iberian territories of the 4th and 3rd centuries B.C. In this context, the dialogue between the local and imported images (in pottery, terracotta, stone and bronze), becomes an essential element for understanding a period marked by war trauma. In order to better understand this complex period, both from a diachronic and synchronous perspective, two case studies will be presented, which were recurring scenarios during the Second Punic War, as recorded in Roman sources and corroborated by archaeological evidence: Castulo and Iliturgi.

3 FINDING CARPETANIA. THE ROMAN CONQUEST OF MIDDLE TAGUS VALLEY AND THE CREATION OF A "NEW-TRADITIONAL" REALITY IN THE IBERIAN PENINSULA

Abstract author(s): Sánchez de Oro, Pablo (Department of Prehistory and Archaeology. Autonomous University of Madrid) - Berrocal-Rangel, Luis (Department of Prehistory and Archaeology. Autonomous University of Madrid)

Abstract format: Oral

The arrival of the Mediterranean powers to the Iberian Peninsula wrote a new page in History of Southwestern Europe. Carthaginians and Romans generated a great impact, altering the organisation, the settlement, and, even, the identities of these populations. Our aim is to show how this process took place in the Middle Tagus Valley, where, following the classical sources, the Carpetani people were established. Due to the importance and the prestige of these references, the idea of a homogeneous people with a shared idiosyncrasy has prevailed from the Renaissance to the late years of the 20th century. Nevertheless, the most current research prove that this traditional assumption was wrong. On the contrary, before the Roman conquest of this territory, his inhabitants lived in small communities organized in settlements of different type which acted as the truly generators of ethnicity. All of these in a framework where heterarchy was the mode. So, we pursue to illustrate —through a new and wide methodology based on an interdisciplinary approach (i.e., Geographical Information Technologies —GIT—, the review of classical sources and archaeological fieldworks and materials, and the comparison with analogues areas beyond the Iberian Peninsula)— how the encounter between Rome and the populations of the Middle Tagus Valley drastically transforms the reality of this space.

4 MEDITERRANEAN TRADE AND SOCIAL CHANGE IN NORTHWESTERN IRON AGE IBERIA: A CONTEXTUAL APPROACH

Abstract author(s): Sastre, Inés - Currás Refojos, Brais (CSIC) - Santos Cancelas, Alberto (Independent) - Orejas Saco del Valle, Almudena (CSIC) - Álvarez González, Yolanda - López González, Luis (Terra Arqueos)

Abstract format: Oral

Since the 1980s there has been a change in the assessment of Mediterranean contacts in the Northwest of the Iberian Peninsula during the Iron Age. In the last decade, new data has reinforced this perspective. While the Roman influence is still considered irrelevant until the Cantabrian-Asturian wars (29-19 BC environ), the presence of Phoenician merchants has become a key element in explaining the archaeological record of the forts and their processes of change mainly from 4th century BC onwards.

Our goal is to propose an alternative interpretation of the scope and impact of pre-Roman Mediterranean contacts based both on current knowledge about the Iron Age societies prior to the s. II BC and the entity of the imported materials. Many of the assumptions that are currently used to characterize the Phoenician-Punic exchanges in this region must be challenged and data from recent excavations in the castro of Elviña and other settlements will be

discussed. We will try to demonstrate that the intensity of the pre-Roman Mediterranean contacts do not allow us to affirm the existence of trade inserted in a market economy prior to the arrival of Rome, because this idea is inconsistent both with the social record of castro communities and with the verified quantification of imported items.

5 THE BRONZE HAND OF IRULEGI (ARANGUREN, NAVARRE): A TESTIMONY OF VASCONIC WRITING AND INDIGENOUS RITUAL FROM THE 1ST CENTURY BC

Abstract author(s): Aiestaran, Mattin (Aranzadi Science Society, Department of Archaeology; UPV/EHU, Department of Geography, Prehistory and Archaeology, Investigation Group of Prehistory IT-1223-19) - Velaza, Javier (University of Barcelona, Latin Philology Department) - Gorrochategui, Joaquin (UPV/EHU, Classic Studies Department) - Usúa, Carmen (ARTUS) - Iriarte Avilés, Eneko (University of Burgos, Department of History, Geography and Communication; Aranzadi Science Society, Department of Geology) - Narbarte Hernandez, Josu (University of the Basque Country - UPV/EHU, Research Group on Heritage and Cultural Landscapes; Aranzadi Science Society, Department of Archaeology) - Ruiz Gonzalez, Daniel (Aranzadi Science Society, Department of Prehistory; UPV/EHU, Department of Geography, Prehistory and Archaeology) - Mendizabal-Sandonís, Oihane (Aranzadi Science Society, Department of Archaeology; EHU/UPV, Classic Studies Department) - Agirre Mauleon, Juantxo (Aranzadi Science Society, Department of Archaeology)

Abstract format: Oral

The Iron Age hill fort of Irulegi (Aranguren Valley, Navarre), with various occupations from the 14th century B.C. until the 1st century BC, was located on the top of the mountain of the same name, between two pre-Pyrenean valleys. The last phase of this hill fort suffered a conflagration in the context of the Sertorian Wars, after which, the territory of the Vascones went from being in the orbit of the empire, to being part of it. The aforementioned conflagration led to the abandonment of the town and abundant artefacts in primary position have been found under the remains of the fallen buildings. An exceptional example of these artefacts is the inscription engraved in a Paleohispanic sign on a bronze sheet in the shape of an adult hand. Its morphology and decoration, its finding context (the threshold of a residential building), the use of a special variant of a Paleohispanic script and the appearance of the term *sorioneku* at the beginning of the text, echoing present-day Basque word “zorion” meaning “of good fortune”, lead us to interpret it as an apotropaic and ritual epigraph. This novel finding re-evaluate issues such as Vasconic epigraphy and literacy just before Romanization, and the influence Rome had on the writing system and rituals of the indigenous population of Navarre.

6 EXPLORING THE PERIPHERY: INITIAL FINDINGS OF A PALEODIETARY ANALYSIS OF A RURAL COMMUNITY IN SCORRIONE, SICILY

Abstract author(s): Schmidtova, Dominika (Department of Archaeology and Museology, Masaryk University) - Hukelova, Zuzana (Institute of Archaeology of the Slovak Academy of Sciences) - Vyskocilova, Gabriela (Department of Chemistry, Masaryk University) - Klontza, Vera (Department of Archaeology and Museology, Masaryk University) - Gil, Joan (Department of Archaeology, University of Hradec Králové) - Scerra, Saverio (Soprintendenza per i Beni Culturali ed Ambientali di Ragusa) - Fernandes, Ricardo (Max Planck Institute of the Geoanthropology; Climate Change and History Research Initiative, Princeton University; Department of Archaeology and Museology, Masaryk University)

Abstract format: Oral

The Scorrione West (Ragusa reg.) burial site is of great archaeological significance due to its function, location, and chronology. Our research focussed on one hypogeum D, which provided an exceptional set of information about the architecture of the burial complex, as well as its users during the Late Antiquity period. The complex was mainly used by small local rural communities between the 4th and 6th centuries, though the grave goods assemblages indicate intermingling with other cultures, evidenced by the presence of Vandal and Gothic artefacts alongside locally-made objects.

In this paper, we present the preliminary results of our bioarchaeological research. Carbon and nitrogen stable isotopes were analysed on a group of individuals from hypogeum D at Scorrione and a reference sample of five individuals from an analogous context in the Ragusa region (Cisternazzi catacombs). We have combined dietary isotopic data with paleopathological and archaeological results to gain an insight into the lifestyles of the local rural population in the south-east of Sicily. The initial results suggest that, despite being a detached rural community, they were not isolated from influences from mainland Italy or the African borderland.

7 SOCIETY ON THE PERIPHERY OF THE ROMAN EMPIRE: CONSTRAINTS FROM SR ISOTOPE SYSTEMATICS OF CREMATED INDIVIDUALS IN NIJMEGEN, THE NETHERLANDS

Abstract author(s): De Coster, Maura (Vrije Universiteit Amsterdam) - Hendriks, Joep (Gemeente Nijmegen) - Davies, Gareth - Kootker, Lisette (Vrije Universiteit Amsterdam)

Abstract format: Oral

The Dutch city of Nijmegen, which is located on the banks of the river Waal, provides a unique opportunity to study population dynamics in a Roman borderscape. Not only was Ulpia Noviomagus the most important Roman town built within the Netherlands between 100-270 CE, it was also a key strategic military location along the lower Germanic limes, the northernmost border of the Roman empire. Consequently, Ulpia Noviomagus attracted people from different parts of the Roman Empire and from a variety of different cultural backgrounds.

Cremation was the dominant burial ritual in Roman Nijmegen, not only in the urban and military cemeteries, but also in the rural cemeteries of the Batavian countryside north of the Waal. To date, more than a dozen grave sites containing at least 3000 individuals have been recovered. These graves provide new insights in population dynamics within the northern region of the Roman Empire and specifically along the lower Germanic limes borderscape. Sr isotopes and concentrations of the cremated remains prove to be excellent tools to show new understandings of the population that lived in Nijmegen. This paper gives a unique insight into the landscape and society on the periphery of the Empire.

8 SOUTH-WEST SLOVAKIA IN THE 1ST CENTURY B.C.: LATE LA TÈNE OPPIDUM IN BRATISLAVA AND ROMAN INFLUENCE

Abstract author(s): Kovár, Branislav (Institute of Archaeology, Slovak Academy of Sciences) - Čambal, Radoslav (Slovak National Museum – Archaeological Museum)

Abstract format: Oral

The area of south-west Slovakia and the neighbouring regions have become the centre of interactions of five ancient societies. These were the La Tène culture, the Celtic Boii tribe (which came later), Germanic tribes, the Dacians, and the Roman Empire. In our presentation, we will focus on research on these interactions. An important role was played by the region's strategic location at the crossroads of trade routes – the Danubian route, leading from the west to the east, and the Amber route, commencing in Aquileia and heading north, up to the Baltic Sea.

The centre of the area was at the oppidum of Bratislava, whose acropolis was located at today's Castle Hill. The foundations of the stone architecture, undoubtedly the work of Roman builders, were discovered here. They testify to the relations of the local elite with the Roman Empire.

The oppidum is connected with the Boii tribe. Generally, we suppose that they came here after the campaign of the Germans from Bohemia. Their departure is dated to the beginning of the 1st century B.C. The key information about the movement of the Boii is Caesar's note about their unsuccessful siege of Norea (64/63 B.C.). The decline of the oppidum is connected to the Boii-Dacian conflict (42/41 B.C.). However, the Celtic/Boii settlement of the oppida disappears later.

Unfortunately, since we have less relevant results of the cooperation between archaeology and natural sciences in the defined territory, we will focus mainly on material and written sources. The La Tène archaeological finds are not concentrated solely in Bratislava. We know of several other sites in the region with an intensive Celtic presence. We have a number of new finds that are evidence of the interaction between the Roman Empire on the one hand and the Celtic and Germanic cultures on the other.

9 MELTING POT PANNONIA

Abstract author(s): Schwenzer, Gerit (No affiliation)

Abstract format: Oral

The first couple of centuries AD saw some cultural changes and crossings in northern Pannonia. The late Iron Age – or pre-Roman Iron Age – came to an end and the process of Romanisation started. This is visible in artefacts such as pottery and jewellery, but also in fashion. Clothes, then and now, are part of identity and give a deep insight of influences and changes, or where traditions were kept. Although textile finds are extremely rare, fortunately there is evidence carved in stone, literally. Some examples of those image stones shall be presented in this paper.

Not only the locals changed under the influence of the Romans. Due to treaties people were moved to, from and around the Roman Empire. An example shall be given where food – or rather its remains – might point to a historical event, where Romans gave refuge to a peoples coming from north of the river Danube and therefore from outside the Empire. This refuge might be located in the north of Pannonia and shall also be presented in this paper.

This paper shall give – with the examples presented – a small insight of peoples who lived in the Roman Province of Pannonia near the River Danube, and who were caught between tradition and change, between borders and trading connections.

10 SPATIAL AND TEMPORAL VARIATION IN LIVESTOCK MORPHOLOGY AS EVIDENCE FOR VARYING ROMAN INFLUENCE IN SOUTHEAST EUROPE

Abstract author(s): Everett, Sarah (BioArCh, Department of Archaeology, University of York)

Abstract format: Oral

Among the many cultural and economic changes brought about by the Roman occupation were widespread developments in animal husbandry, production, and consumption, as newly-established provinces were brought within the sphere of Roman influence and integrated into the Roman economic system. Across occupied regions, the Roman period saw greater specialisation in husbandry practice, and the development of larger, more productive livestock, sustaining or accelerating trends in livestock size increase that first emerged during the Iron Age in many regions. Beyond the Empire, there is much less evidence for increased livestock size during the Roman period, emphasising the importance of direct Roman control and integration into a wider Roman economy for the development of larger livestock.

Via meta-analysis of published zooarchaeological data spanning the late Iron Age to late Antiquity in southeast Europe, this paper evaluates the impact of the Roman Empire on livestock morphology on both sides of the Danube limes. The paper presents data from three regions subject to varying levels of direct Roman control – (a) the Balkan provinces, under long-term Roman occupation, (b) Dacia, a Roman province in the second and third centuries CE, and (c) regions to the north that remained beyond the Empire. The study assesses the impact of varying duration of Roman occupation on the extent of change in livestock morphology, and on the longevity of any observed changes. The impact of pre-Roman livestock size is considered, as is the potential influence of climate, and the extent of morphological variation by site type.

11 NEGOTIATING MATERIAL AGENCY AT THE DANUBIAN EDGE OF ROMAN EMPIRE

Abstract author(s): Mihajlovic, Vladimir (Faculty of Philosophy, University of Novi Sad)

Abstract format: Oral

The emergence of the Roman Empire can be comprehended as a process of structuring generated by interactions of diverse types of actors. The frontier zones are especially telling cases in this regard because they initiated vivid, dense and tensed co-relations of the parties involved, which produced innumerable kinds and levels of outcomes. However, they were not simply spatio-political category defined by the shifting limits of Roman power, but also realms of transition permeated with intensive and continuous (re)negotiations of different sorts. The state of liminality caused transformation of a whole range of spheres, from political arrangements, social organization and economy, to culture in the widest sense of a term. Although the establishment of new relations was asymmetric in favor of the Empire's elites, local actors were by no means passive, and the newly emergent structures critically depended on their involvement and mediation of power.

All this inevitably involved materialities of different character: things from built environments to “trinkets” participated in articulation and manifestation of frontier's life. Of course, distinct objects worked in differing manners and ways, and with variable significances, but material components were co-constitutive in all phenomena that jointly composed the conditions of a border zone. Therefore, things, within the assemblages created from different actors (humans, natural environment, non-human animated or inanimate entities), played active parts in social realities. In this presentation I will discuss objects' potential to mediate meanings and facilitate social positions and roles by focusing on their capacity to translate and determine different sets of values. Basing my observations on the late Iron Age and early Roman closed deposits in the frontier zone of the middle Danube, I will try to show how certain types of artifacts were associated with changes and transitions that were initiated by expanding Empire and its relations with local communities.

12 RIVERS AND WALLS: ENCOUNTERS AND MATERIALITY ON ROMAN FRONTIER WATERSCAPES IN NORTHERN BRITAIN AND THE LOWER DANUBE

Abstract author(s): Hanscam, Emily (Linnaeus University) - Buchanan, Brian (Eastern Washington University)

Abstract format: Oral

Roman frontiers continue to have a significant impact on the contemporary geopolitical landscape across Europe. In East-Central Europe, the Lower Danube frontier serves as the border between Romania and Bulgaria, while Hadrian's Wall is persistently drawn into popular discourse as the imagined (if not actual) border between England and Scotland. These frontiers each involve waterscapes: in Roman Britain the River Tyne and Solway Firth bookended Hadrian's

Wall, while the Lower Danube river was central to the construction of the Limes. In both of these cases the waterways have a noteworthy impact on the frontier landscape and its continued memorialisation, although this impact is better recognised on the Lower Danube. On Hadrian's Wall, while the waterways both extended the built forms of the wall complexes and acted as conduits for transportation and trade, they are often discussed as minor contributions at the end of the complex, rather than being seen as important components of the frontier.

We argue that the waterways in and along frontiers are not only geographically expedient end points of the built environment, but have a linked materiality that has not been critically appraised and brought into discussions of these frontiers. Recent scholarship has noted the long afterlives of the Roman borders as nationalistic markers in the landscape, and through a comparative approach between Hadrian's Wall and the Lower Danube, this paper demonstrates that an understanding of the interactions between the built and natural boundaries is essential for both encounters and transformations on the border zones in Antiquity and for understanding their long-term impact on modern socio-political landscapes. Using spatial analysis within GIS, this paper probes the dual nature of these waterways as both barriers and networks, and how these aspects worked together to create perceived border zones that still exist in popular imagination of borders today.

13 **BEYOND HADRIAN'S WALL: NEW SURVEY APPROACHES TO INDIGENOUS AND ROMAN-PERIOD LANDSCAPES IN NORTHERN ENGLAND AND SOUTHERN SCOTLAND**

Abstract author(s): Hardwick, Ian (University of Edinburgh) - Cowley, Dave (Historic Environment Scotland) - Fernández-Götz, Manuel (University of Edinburgh) - McDonald, Sophie - Hamilton, Derek (SUERC, University of Glasgow)

Abstract format: Oral

This paper will discuss ongoing work within the Leverhulme-funded "Beyond Walls" project, focusing on new survey approaches to analyse settlement evidence around and beyond Rome's northernmost frontier (modern-day northern England and southern Scotland). We present preliminary results from the analysis of the archaeological settlement record collated from national and regional historic environment records, supplemented by newly-undertaken large-area surveys using remote sensing data sources. Evident patterning in the settlement record over the period from about 500 BC to AD 500 allows for the assessment of potential impacts on indigenous societies during the Roman presence in relation to longer-term trends. This paper will introduce the first two case studies from the project: 1) a transect running north from the major Roman urban centre and military base at Carlisle in north-west England into the Southern Uplands of Scotland; and 2) a block following the major Roman road of Dere Street through upland Northumberland into the area around Melrose in southern Scotland. So far, the project has created comprehensive databases for each case study, drawing upon a wide range of archaeological data, both new and legacy, working at a range of different spatial and temporal scales. The use of remote sensing techniques has allowed for the identification of numerous new sites, particularly small farmsteads that would have represented the living spaces for the majority of the population. The preliminary results are analysed taking into account elements of topography, land use, and relation to Roman military installations.

14 **LANDSCAPE AND SETTLEMENT "BEYOND WALLS": USING ARCHAEOLOGICAL SCIENCE TO EXPLORE SETTLEMENT AND LAND-USE DYNAMICS ON THE ROMAN EMPIRE'S NORTHERN FRONTIER**

Abstract author(s): McDonald, Sophie - Hamilton, Derek (Scottish Universities Environmental Research Centre; University of Glasgow) - Hardwick, Ian (University of Edinburgh) - Cowley, Dave (Historic Environment Scotland) - Fernández-Götz, Manuel (University of Edinburgh)

Abstract format: Oral

The Leverhulme-funded "Beyond Walls" project aims to explore the impact of Roman occupation in Northern Britain through analysis of settlement and land use in the area between and around Hadrian's Wall and the Antonine Wall. "Beyond Walls" is looking at trends and changes over the long-term – c.500 BC-AD 500 – in a study area extending from northern England to the southernmost part of the Scottish Highlands. The project is adopting a multi-scalar, interdisciplinary approach, reviewing published survey and excavation data and grey literature; incorporating remote-sensing data; producing new radiocarbon dates from excavated sites; and collating and producing palaeoenvironmental datasets. This paper will outline the methodologies and preliminary results of the radiocarbon dating and palaeoenvironmental analysis strands of the project. The first of these strands comprises a programme of radiocarbon dating of archival samples from selected excavated sites, including legacy research projects and more recent excavations by commercial units. These new dates are being used to create chronological models exploring and challenging existing narratives of Iron Age/Roman period settlement in this northern frontier area. Palaeoenvironmental techniques have for decades been used to further understand the potential impact of the Roman presence in Britain on the landscape, both in colonial and frontier contexts. However, many legacy palaeoenvironmental sequences from the

northern British frontier area are based on a relatively small number of scientific dates, limiting their interpretation. As part of the “Beyond Walls” project, we are producing new palaeoenvironmental datasets with improved chronological precision from selected sites in our study area, updating our understanding of the Iron Age and Roman-period landscapes of the northern British frontier zone.

15 ENCOUNTERS-AND-TRANSFORMATIONS-BEYOND-ROMAN-BORDERS: AN-INTEGRATED-PALEOENVIRONMENTAL, ARCHAEOLOGICAL AND HISTORICAL APPROACH-WHICH-WILL-EXPLORE-THE UNCONQUERED-SOCIETIES-LIVING BEYOND THE NORTHERN MOST ROMAN FRONTIER AND THEIR ENCOUNTERS WITH ROME

Abstract author(s): Jones, Samantha - Mighall, Tim (University of Aberdeen) - Blaauw, Maarten (Queen’s University Belfast) - Campbell, Ewan (University of Glasgow) - Hunter, Fraser (National Museums Scotland) - Martínez Cortizas, Antonio (University of Santiago de Compostela) - Noble, Gordon (University of Aberdeen)

Abstract format: Oral

It is well known that the Roman Empire expanded as far north as the Highlands of Scotland between the 1st and 2nd centuries AD before retreating to a series of frontiers in modern day central Scotland and northern England. Major changes to the everyday activities of locals and to the landscape, may have come with these events. From fragmented historical and available archaeological records, evidence suggests the Romans yielded considerable influence over at least some of the unconquered native communities. Influence came in the form of subsidies to promote peace and occasionally through violent campaigns to quell native uprisings, but Roman influence would not have been consistent or uniform; it would have varied regionally, impacting local communities differently and over generations with some communities becoming more Romanised than others. However, most 1st millennium AD archaeological sites north of the Antonine Wall have never been extensively excavated. Historical texts tend to be fragmentary, particularly for eastern Scotland, whilst palaeoecological investigations tend to use better-preserved lake or peat bog archives, often located some distance from archaeological sites at low chronological resolution. This means that we still know very little about the daily lives of native communities living in northern Britain, their economy, environment, or the impacts of social/environmental change. This paper presents the results so far of a new Leverhulme funded project which integrates higher resolution palaeoecological analysis with archaeological and historical archives, aimed at exploring how Roman occupation in Britain impacted the unconquered native communities living beyond the northern most Roman frontier.

16 UNRAVELLING TEXTILE PRODUCTION ON THE ROMAN FRONTIER

Abstract author(s): Vavle, Aboli (Teesside University) - Alberti, Marta (The Vindolanda Trust) - Hopkins Pepper, Heather (Independent Researcher) - Taylor, Gillian (Teesside University)

Abstract format: Oral

In this paper we discuss aspects of two ‘bookend’ steps of the chaine operatoire of textile production on the Roman frontier: spinning and dyeing. Scholarship on spindle whorls has often focused on functional analysis, yet whorls on the Roman frontier are also signifiers of female identity in a traditionally male dominated environment, and objects which can be both purpose-built or crafted out of recycled materials. Decoration and use wear on spindle whorls may offer insights on their making and use. Where possible, distributional analysis of their deposition and discard pattern may contribute to answer questions of status and industry. In the first part of the paper, we explore how a database of spindle whorls on the Roman Frontier would benefit the study of the subject, and the steps necessary towards achieving such an ambitious goal. Dyeing wool was integral to the production of textiles, and understanding which plants were used and how is still poorly understood. In the second part of this paper, we present results from a textile experiment using different mordants and birch dye, analysed using SEM-EDX, UPLC-PDA and UPLC/MS/MS. Preliminary results indicate that different wool and mordants can be identified by statistical analysis of flavonoids. With so many research questions to explore, and such a vast dataset to gather and standardize, international and interdisciplinary collaborations such as the ones we present are not only desirable: they are essential to further our understanding of textile tools and industry.

17 FRAGMENTS OF TWO IMPERIAL DONATIVA FROM NEWGRANGE (IRELAND)

Abstract author(s): Janiszewski, Robert (University of Warsaw)

Abstract format: Oral

Newgrange passage grave is arguably the most prominent monument of the Bru na Boinne, Irish famous archaeological complex. It is located in the River Boyne Valley in eastern part of Ireland. Although the grave was erected during Neolithic Period, it also played important role for the local population in the subsequent periods. During the Late Iron Age the site was used as a shrine where valuable Roman imports, including gold coins and ornaments, as well as

few native objects, were deposited as ritual offerings. Among recorded finds two intriguing fragments of gold objects were found, one as a stray 19 c. find, while the other was unearthed during excavation in 1960s, both are stored in the NMI Collection in Dublin. First of the pieces, a small tubular fragment decorated with repoussé relief, was donated to the RIA in 1863, and, according to author's research, it is a fragment of very distinct late Roman tubular bracelet, with parallel examples coming from hoards from Bonn and Hoxne. The second piece is even more enigmatic, it was made from a gold rod and it bears Latin inscription. Found in a curved form, due to its similarity to the terminals of famous gold torcs of Tara type, dated to the Bronze Age, in some publications it was interpreted as a Bronze Age gold fragment, reused during Late Iron Age. However, in the light of analogical objects, firmly dated to the 4 c. AD, it can be assigned to the same period, while results of chemical analysis confronted with the results characteristic for BA torcs clearly speaks against such possibility. Both analysed fragments, belonging to the group of prestigious, high status goods, indicate strong direct links between the élite of local population and Roman administration during the last century of Roman occupation of Britain.

18 THE BACKBONE OF EMPIRE: THE CASE FOR A CENTRAL PERSPECTIVE IN ROMAN ARCHAEOLOGY

Abstract author(s): Maschek, Dominik (Leibniz-Zentrum für Archäologie)

Abstract format: Oral

As evidenced by the famous Tabula Peutingeriana, late Roman map-makers envisaged the empire as dominated by a riverine backbone which bounded its transalpine provinces from Lower Germany all the way to the Black Sea. This, however, is a perspective which has never been fully adopted in Roman archaeology. For instance, the concept of Romanization has been developed and criticised from the perspective of the margins, mostly the northernmost Roman periphery, not only in terms of modern academia (Britain, Netherlands), but also with respect to the provincial society and material culture they were primarily concerned with. Since the Fall of the Iron Curtain, this situation has started to change. Recently, first synoptic studies on urbanism and material culture in the Danube provinces have been published which form an excellent basis for further theoretical work.

In this paper, I want to argue that this recent change in research also needs to be reflected in how we conceptualise the Roman world more broadly. In particular, the term 'frontiers' stands in the way of a clear perception of how important the provinces in central, eastern, and northwestern Europe actually were in the tissue of the empire. In the transalpine arc from northern to eastern Europe, new excavations and landscape studies shed light on the creation of distinctive productive regimes in the countryside, and on the emergence of urban culture and military strongholds. Moreover, its archaeology reveals an image of late Roman transition which is markedly different from places like Britain. Viewed from the imperial 'centre', the question is not merely one of 'Romanisation' or indigenous identities, but of corridors of movement, routes of invasion, trans-European trade links, and urbanisation and rural population growth in a vast area which had fascinated Greek and Roman writers since the days of Herodotus.

248 ARCHAEOLOGY AND THE CLIMATE CRISIS: RESILIENCE, ACTIVISM, AND PEDAGOGY

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Piper, Stephanie (University of York) - Patton, Katherine (University of Toronto)

Session format: Discussion session

Human responses to climate change and resilience have long been a focus of archaeological research, but we are only starting to think about the degree to which our discipline should address the current climate crisis. Archaeologists are grappling with a multitude of challenges presented by climate change - issues such as the sustainability of the discipline, how to respond to heritage loss on a variety of scales, and how best to communicate actionable policy advice based on our research. Yet it is in our teaching where we can have the largest impact, by inspiring students toward activism.

Building on Cobb and Croucher (2014; 2020), this session weaves together teaching and research practices to consolidate the relationship between archaeology and the climate crisis, and feed into a framework for archaeological and heritage education.

We welcome contributions that explore creative solutions to questions such as: how can we convey the relevancy of climate change matters from the deep and recent pasts to the present? Can we teach sustainably? Can the effects of the current climate crisis in archaeology be examined in our teaching? We would also like to use this as a space to share best practice. Are you changing how you teach/practice archaeology in response to climate change and if so, how? Are you working with communities to think about heritage loss due to climate change, or engaged with multi-vocal co-creation and student leadership in teaching? Are you collaborating with other disciplines or professions to actively tackle the current climate crisis? Does this translate into your teaching (both within and outside the classroom)?

1 MARITIME ARCHAEOLOGY WITHIN THE CLIMATE EMERGENCY: RESEARCH AND TEACHING POTENTIALS

Abstract author(s): Velentza, Aikaterini (University of Helsinki)

Abstract format: Oral

Maritime archaeology, an academic discipline with a multi-faceted and interdisciplinary nature, has been identified as a significant field amongst the humanities that could contribute to matters of climate change and sustainability (Wright 2016; Henderson 2019). This paper presents the experience of the author in her effort to adapt maritime archaeological research and teaching within the realities of the climate emergency. First, details regarding approaches to research will be presented. In this analysis, the author’s interdisciplinary project ‘Re-imagining the use of traditional watercraft in the Aegean Sea for a sustainable environment and economy’ and recent publication on ‘Maritime Archaeological Research, Sustainability, and Climate Resilience’ (Velentza 2022) will be included. Additionally, questions regarding necessary changes in the practice and conduct of maritime archaeological fieldwork will be raised, as for example the feasibility of using slow travel rather than air travel for research endeavours. Finally, the paper will focus on the potential of contributing to climate action through teaching at the university but also in the community. The significance of incorporating issues of climate change in two maritime archaeology courses (KUMA-AR511: Human-Environment Interactions in Maritime Spaces; KUMA-AR513: Issues in Maritime Archaeology – Past and Present: PART 2) taught at the University of Helsinki will be discussed, as well as the potential of raising awareness on sustainable adaptation and human-centred solutions through public outreach to maritime communities, who are and will be impacted by climate change effects. Through this review of research and teaching potentials it is hoped to set the basis for a larger framework for interlinking maritime archaeology, climate change and sustainability now and into the future.

2 CULTIVATING RESILIENCE THROUGH PEDAGOGY: LONG-TERM PLANT-HUMAN INTERACTION AND CREATING SUSTAINABLE FUTURES

Abstract author(s): Masur, Lindi - Michel, J.T. (Sewanee: The University of the South) - Colchado Kelley, Stephanie (Growing Roots)

Abstract format: Oral

Archaeologists in North America must actively work to materialize a decolonized and socially relevant discipline. Paleoethnobotanists first must heed Indigenous scholars admonishing the use of co-opted ontologies and traditional ecological knowledge for the construction of archaeological narratives. Through the acknowledgement of our settler positionality within the movement towards Indigenous cultural revitalization, we are increasingly aware of our unique role as educators as our contribution to the creation of resilience in the face of climate change. This paper illustrates the beneficial role of archaeological studies within the anthropology curricula at a small ecology- and sustainability-oriented liberal arts college in the southern U.S., including courses like environmental justice, food and culture, and histories of economic plants. It is apparent that Gen Z students engaged with climate change issues inside and outside of the classroom are confronted with not only a bleak future but “climate anxiety” and apathy towards long-term career, family, and community building. The inclusion of archaeological case studies of resilience in the face of past climate crises in the aforementioned courses has been both a relief and inspiration for students. Indeed, understanding local long-term plant-human interaction has much to contribute to imagining and implementing sustainable futures, particularly in addressing issues in agrobiodiversity and food justice. This paper addresses how issues of Indigenous food sovereignty and the archaeology of pre-colonization horticulture have been implemented within these curricula. Furthermore, through supporting student-led experimental horticulture of eastern North America’s “lost crops,” and creating class research projects in collaboration with a local food justice nonprofit and their community garden’s objectives, we reflect upon the outcomes of integrating resilience narratives and student activism within anthropological and archaeological pedagogy.

3 CLIMATE RESEARCH AND THE ARCHAEOLOGY OF SOUTHWEST ASIA: TOWARDS A NEW PEDAGOGICAL APPROACH

Abstract author(s): Welton, Lynn (University of Toronto) - Reculeau, Hervé (University of Chicago)

Abstract format: Oral

Discussions of climate change and its repercussions for modern society have become pervasive in the media and in general social discourse, reflecting global uncertainty and anxiety about the future of our planet. One region identified by the international scientific community as a critical climate hotspot that is particularly vulnerable to the impacts of climate change is Southwest Asia. The complex association between Western resource extraction, colonialism, and

archaeological exploration in this region also means that archaeologists working here have an obligation to consider the impacts of their research particularly carefully.

The authors (an archaeologist and an ancient historian) reflect on their experiences teaching courses focused on improving climate literacy among students of the ancient past, and challenging unhelpful narratives that reduce ancient societies to the status of passive victims of external natural forces. Instead, the focus should be placed on the agency and resilience of ancient social actors, allowing for the existence of collaboration, contradictions, and at times conflict between various groups and interests. This renewed approach is informed by years collaborating on multi-disciplinary projects that involve ancient historians, archaeologists, climate scientists, and modellers, which shed new light on how responses to climate change in the deep past can inform ongoing climate research and social responses to the anthropogenic climate crisis.

4 **ARCHAEOLOGICAL PLACES AND CLIMATE CHANGE IN WABANAKIK: THE SPACE BETWEEN ARCHAEOLOGICAL MITIGATION AND TRADITIONAL WAYS OF KNOWING**

Abstract author(s): Blair, Susan (University of New Brunswick) - Nicholas, Ramona (Tobique First Nation - Negutukuk)

Abstract format: Oral

In Wabanakik (a part of which is now known as the Canadian Maritime Provinces), as in the rest of Turtle Island, archaeological responses to climate change are generally informed by broad ethical frameworks that are centred on a particular approach to the preservation of archaeological places. Systems of archaeological practice that have developed alongside environmental impact legislation represent the efforts of non-Indigenous governments to manage the interaction between archaeology and economic development. These systems are organized around mitigating the damage to and destruction of archaeological “resources” due to development and (more recently) climate change, with excavation and data recovery. This Western framework operates in tension with many Indigenous views. In Wabanakik, place-making is relational, community-centred, and intimately connected to resilience and cultural, economic and spiritual survival. Places are woven into landscapes of meaning and identity, and no mitigation can moderate the impact of their loss. In this paper we explore the tension between these views and examine how they can play out in educational settings in complex ways, creating both challenges as well as opportunities for decolonization and reconciliation.

255 **“WARRIORS” AND “WEAVERS”: CHALLENGING GENDER STEREOTYPES IN ANTIQUITY [AGE]**

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Fulminante, Francesca (Bristol and Oxford University; Hanse-WissenschaftsKolleg 2022-23; University Roma Tre) - Benelli, Enrico (University Roma Tre) - Heitz, Christian (University of Innsbruck) - Martins, Ana Cristina (Universidade de Évora | IN2PAST) - Pope, Rachel (University of Liverpool)

Session format: Regular session

Two years ago, an EAA session, ‘To gender or not to gender’ organised by B. Gaydarska, K.Rebay-Salisbury, P. Ramirez-Valiente and J. E. Friez, challenged the then dominating view of gender development and symbolism in Euro-Mediterranean Antiquity, as elaborated by Robb and Harris. According to the latter, Neolithic gender representation is ambiguous and blurred, with a transition occurring in the Copper-Bronze Age towards greater distinction in the Iron Age-Archaic Period, of an emerging binary ideology which related men to the ‘martial warrior’ and female to the ‘beautiful weaver’.

The 2020 EAA session and other studies instead turned our focus to the association between gender and biological sex, revealing that the interplay between indicators of different personhood and identity aspects, such as age, status, class and even ethnicity, is much more complex than the old binary suggests, including now the emergence of different genders in the prehistoric data.

Building upon these foundations, it is also important to reconsider who has produced knowledge in this field, understanding if andro-centric narratives and/or, on the contrary, new perspectives have been proposed. Moreover, it is important to know how much these new analyses have and continue to contribute to a new narrative that will be expressed in different media, and types of dissemination, among which museums especially need to be analysed, to the most diverse territories and communities, contributing to the fulfilment of at least one of the SDGs, that of gender equality.

In this session, with an Introduction by M. Seifert and a Key-note paper by R. Whitehouse, we welcome papers challenging the current gender stereotypes in European and the Mediterranean antiquity and addressing the scholars who

work in these fields. We also invite papers from the New World or anthropological field for comparative perspectives. In this way we aim to achieve more nuanced and balanced interpretations to face modern challenges.

ABSTRACTS

1 BEYOND STEREOTYPES: BUILDING SECURE GENDER METHOD

Abstract author(s): Pope, Rachel (University of Liverpool) - Bickle, Penny (University of York)

Abstract format: Oral

Although often readily acknowledged as an important topic of analysis in Archaeology, gender is frequently side-lined in narratives of social change. As a direct result, stereotypes of masculinity and femininity often implicitly populate the major changes which shape prehistory. To move beyond this situation, we contend that greater attention to analytical methods used in archaeological studies of gender is required, to move us beyond critique, into charting the diversity found through time and space. Building on Gaydarska et al. (2023), we reject the 1970s' Cambridge notion of gender – that sex=gender and can be viewed as a universal structuring principle – towards an understanding out of 1980s gender archaeology as diverse and historically situated. Evolutionary approaches to gender (from fluid to binary), which seek to support the status quo by perpetuating modern gender stereotypes, fail to account for the variation we see in our datasets. Both of us found, in work carried out independently, different prehistoric genders in the Neolithic and Iron Age (Pope and Ralston 2011; Bickle 2020; Pope 2022). Here we detail the method used in these case studies, alongside recent German practice, as we isolate the mechanics of gender analysis – asking how can we build secure method around gender.

- Bickle, P. 2020. Thinking Gender Differently: New Approaches to Identity Difference in the Central European Neolithic. *Cambridge Archaeological Journal* 30(2), 201-218.
- Pope, R. E. and Ralston, I.B.M. 2011. Approaching Sex and Status in Iron Age Britain with Reference to the Nearer Continent. In L. Armada and T. Moore (eds) *Atlantic Europe in the First Millennium BC*. Oxford: OUP.
- Pope, R.E. 2022. Re-approaching Celts: Origins, Society, and Social Change. *Journal of Archaeological Research* 30, 1-67.

2 THE CONSTRUCTION OF SOCIAL IDENTITY IN EARLY IRON AGE GREEK: FROM THE MORTUARY PERSPECTIVE

Abstract author(s): Lin, Min (University of Cambridge)

Abstract format: Oral

Historian argues that 'gender is a primary way of signifying relationships of power. Changes in the organization of social relationships always correspond to changes in representations of power' (1986, p.1067). The study of gender relations and the construction of the social identity of men and women in the formative period poses an exciting challenge because this period often witnesses drastic socio-political changes that manifest in the shift of the social organisation of gender.

Early Iron Age was widely regarded as a formative period in Greece that inspired enduring debates on socio-political development. However, gender has been mostly left out of the discussion in the existing literature. Focusing on the mortuary data from Athens and elsewhere in Attica, the purpose of my research is to analyse, first of all, the employment of gender as a socially recognised concept. Secondly, how women's social identity is constructed in the mortuary sphere and how such construction changes according to socio-historical development and influence it in turn. Moreover, the study of men's social identity is crucial as it avoids studying women in isolation but examine how gender negotiation contribute to the construction of social identity.

I include all aspects of material traces into my analysis in an attempt to reconstruct the gendered body, retrace the material culture and re-enact the mortuary ritual through the period of over 300 years. By comparing the trajectories in the change of male and female identity, one can tease out how such identities affected and were affected by the broader socio-political development.

3 OH MOTHER! WHERE ART THOU? REPRESENTATIONS OF MOTHERS IN THE ANCIENT GREEK ARCHAEOLOGICAL RECORD

Abstract author(s): O'Keeffe, Amy (Trinity College Dublin)

Abstract format: Oral

Biases against motherhood in the ancient Greek archaeological record trace back to the inception of Classical archaeology as a discipline. These biases have become an unconscious status quo within the discipline, which are rarely questioned. They reflect harmful perceptions of ancient and modern women, especially mothers, and serve to obfus-

cate, and in some cases, erase their presence in history. The corpus of Mycenaean figurines illustrates this issue, in which the specialised types of kourotrophic figurines (woman and child), and charioteer figurines (perceived as male) are interpreted. The male figurines are perceived as depictions of everyday life, while the female and child figurines are interpreted as depictions of a “Mother Goddess”. Ancient women are rarely afforded the courtesy of their mortal agency and are instead diminished and obscured. By exploring this topic, it is possible to identify the issues that are inherent in how scholarship perceives the past, and the more modern ideologies and agendas which colour our representation of past cultures. By using a multidisciplinary approach, it is possible to create a more nuanced interpretation of material culture, as well as address more gendered material in a thoughtful and holistic manner. As with the discipline of Art History, where the feminist revolution has been making changes for decades, Archaeology benefits from fresh perspectives, inclusive ideologies, and interdisciplinary frameworks. Using kourotrophic Mycenaean figurines as a vehicle for feminist critique allows for a discussion of the diachronic history of the material, and the historiography of its study. While keeping the important role of motherhood central to this argument, the acknowledgement of human agency and complex identity beyond a single facet is important to remember. Their agency and identity, to some extent, is retrievable.

4 **EMPOWERING MOTHERHOOD - CREATION AND PRODUCTION DURING IBERIAN LATE PREHISTORY**

Abstract author(s): Vale, Ana (University of Porto - CITCEM/FLUP)

Abstract format: Oral

Women in Prehistory are defined by their sexuality. The prehistoric goddesses rely on their bodies - the naked body is fertile. The prehistoric goddesses persist in the modern Western imaginary through stereotypes like the femme-fatal, defined by her autonomous but distant sexuality. On the other hand, mothers in Prehistory are represented in archaeological imagery by the abstract qualities of being a mother; in the Christian tradition, inspired by the image of Mary - the body is dressed. This polarisation of the female body, between the sacred and the profane, naturalises the inferiority of female sexualised bodies. Although recent studies have interpreted the display of female sexual attributes in representations (rock and portable art) from late Prehistory as collective identifiers, male representations continue to be understood as integrated into a trajectory of individualisation of power whereas female sexuality is linked to collectiveness, natural characteristics, and the private sphere of human life.

In this presentation, I would like to argue that this perspective is based on an impoverished vision of motherhood. The concept of motherhood creates constraints even for feminists because it remains linked to procreation and reproduction, and to the idea of controlling women’s power within patriarchal societies. Motherhood does not define what it is to be a woman, but not revisiting this concept today implies a diminution of the rights of female mothers and a perpetuation of a bias in the past that relegated them to the private sphere. Understanding and studying motherhood as creation and production in Prehistory may contribute to guaranteeing the right and freedom to be a mother as a human project and free women from definitions based on androcentric sexual visions, which in Prehistory validate the definition given to motherhood by the modern Western world as a natural function of every female body.

5 **“WARRIORS” AND “WEAVERS” CHALLENGING GENDER STEREOTYPES IN ITALY: A COMPARATIVE PERSPECTIVE (OSTERIA DELL’OSA AND FOSSA)**

Abstract author(s): di Giovanni, Andrea (Università La Sapienza di Roma) - d’Ercole, Vincenzo (Università Gabriele d’Annunzio Chieti-Pescara) - Fulminante, Francesca (Hanse-Wissenschaft Kollegen, Bristol and Oxford University and University Roma Tre)

Abstract format: Oral

Already in the 1990s, John Robb provided a comprehensive overview of the development of gender symbolism and ideology in Prehistory. During the Neolithic gender representation seems to be much more ambiguous and blurred. With the Copper-Bronze Age and more distinctively with the Iron Age and Archaic Period, a binary ideology seems to emerge, especially from the funerary evidence, between ‘martial warriors’ and ‘beautiful weavers’ (Robb-Harris 2017).

While Robb-Harris’ model partially still holds today, many scholars have challenged this binary conception. The recent paper *Gender or not Gender* by Gaydarska et al. is the most up-to-date discussion on the topic and presents the state of the art (2023). In addition, several studies have showed that the intersectionality between indicators of personhood and identity aspects, such as age, status, class and even ethnicity and gender and sex is much more complex than previously thought.

We present a contextual analysis of the cemetery of Osteria dell’Osa (Latium vetus, 1000-500 BC) and Fossa (Abruzzo, 825 BC-100 AD), which show mostly gendered individuals. However, there is also a significant number of ungendered individuals, burials with both female and male elements and some burials anthropologically determined as female with male objects, and viceversa. In some cases anthropological analyses are ambiguous, or the odd objects could be votive offerings, but the study highlights some complex patterns that deserve further investigation. In future,

we plan to use peptides analyses to sex these individuals scientifically to disentangle objectively the complex relation between sex, gender, and identity in past populations.

6 THE ETRUSCANS AT LAKE ACCESA: GENDER RESEARCH AND NARRATION IN A COMMUNITY OF THE 7TH - 6TH CENTURY BC

Abstract author(s): Colombini, Matteo (Museo archeologico Massa Marittima)

Abstract format: Oral

Lake Accesa is located in southern Tuscany, near the city of Massa Marittima. Geographically it is about 10 km from the Tyrrhenian Sea and in the middle of Colline Metallifere, an important relief system that has been exploited since ancient times for its mineral deposits. Between the end of the VIII and second half of the VI century B.C. an Etruscan community developed here mining, farming and fishing. The research, started in the 80s and directed first by Professor G. Camporeale, then by S. Giuntoli, brought to light a very interesting context, abandoned at the end of the VI century and protected by the vegetation: it was possible to excavate the traces of the village and numerous burials, some of which have not been violated by the entry of tumb raiders. The opportunity to investigate a sealed context and layers not altered by subsequent settlements is very rare in the panorama of Etruscology and this allowed to propose fundamental theses regarding aspects such as urban planning and the socio-economic system of the archaic period. However, an anthropological re-reading of the skeletal remains found during the excavations suggests a re-evaluation of the role and weight of female figures within this periferic urban centre. In the current scientific narrative, from which the educational apparatuses of the Archaeological Park and the Museum of Massa Marittima also derive, women are relegated to a domestic context, reserving the role of warrior and political leader to men. By cross-referencing the anthropological data with the finds, the topography of the necropolis and the housing area the image of an egalitarian society emerges, in which the female figure has a central role in spiritual life and probably politics.

7 REFLECTIONS AND OPEN QUESTIONS ON GENDER IN THE LA TÈNE NORTHERN ITALY

Abstract author(s): Giannella, Giulia (University College Cork)

Abstract format: Oral

The topic of the social role of women has in past research been established as problematic, in part due to modern pre-conceptions on females' social position. Nonetheless, looking at archaeological finds it is now clear that the assumed correlation between gender and sex is not obvious and that gender concepts may have been very complex.

In the La Tène area in Northern Italy (especially, Oleggio and Dormelletto, in Lombardia region, and Santa Maria di Zevio, Isola Rizza and Valeggio sul Mincio, in Veneto region; all dated to the late La Tène) burials which contained grave goods that seem to relate both to a male and female gender were found. In other burials an 'opposite' correlation between the sex of the deceased and the gender implied by conventional interpretation of the grave goods exists (e.g., anthropological women with panoplies).

In the first case it seems possible to suggest more complex concepts of gender, due to specific characteristics or life-histories of the deceased. On the other hand, it could be also possible that some of the objects were deposited in the burials as part of funerary offerings, or that some objects had specific functions and/or symbolical meanings (such as, knives or chain belts). In the second type of burials, it seems possible to envisage a specific choice, maybe reflecting the use of items as status symbols – perhaps the case of anthropologically women buried with weapons – as well as linked maybe to particular roles and/or gender choices.

The aim of this poster is to give a brief overview (through targeted examples) of these cases to raise questions and reflect on the complexity and fluidity of gender. It is in fact likely that more and differentiated roles and genders existed in the La Tène society beyond male warriors and female weavers.

8 CONFLICTING PROPOSALS: SYMBOLIC STATUS OR EXPLOITATION. A THEORETICAL APPROACH FROM THE CASE OF NECROPOLIS 277 OF A-GROUP IN LOWER NUBIA

Abstract author(s): Rodríguez, Beatriz (Universidad Complutense)

Abstract format: Oral

In studies of funerary archaeology, we can often find references to the status of a collective according to the differentiation of the type of burial or the content of the grave goods deposited. However, the concept of "status" poses some problems when it comes to understanding the social reality of a given context. Unlike other concepts such as reciprocity or exploitation, status is an individual term that does not define the social relationships in which social subjects participate and in which material culture is produced, maintained or discarded.

Necropolis 277 from A-Group, analyzed from a processual approach, has been called “the women’s cemetery”. Based on a mathematical model of scores according to different variables (type and size of the grave, orientation, position of the body, contents of the grave goods...) it was concluded that women had a certain status, related to their condition of “givers of life”. Without overlooking these first contributions, with new approaches in hand (in this case, influenced by social archaeology and feminist theory), a critical review has been carried out, taking into account other factors and addressing different questions.

Focusing on what has already been highlighted (the evident relationship in the record of women with procreation), the aim is to understand the social reality, and therefore the social relations, that define this cultural group, trying to establish whether there are exploitative relationships between the subjects and on what basis. This analysis allows us to open the debate on the social organization of this cultural group, in general, and on the social role of each of the social subjects, men and women, in particular.

9 **WARRIORS, WEAVERS - OR WEAVING WARRIORESSES? GENDER-B(L)ENDING FEMALE PORTRAITURE FROM ROMAN ANTIQUITY**

Abstract author(s): Hollaender, Sarah (University of Graz)

Abstract format: Oral

Private portraits of women as mythological figures in cross-gendered dress were set-up in Roman funerary contexts between the late 1st and early 4th centuries CE. Women appear in the guise of Omphale, the mythical queen of Lydia, who ruled over Hercules at her court. She wields his club and lion skin, effectively transforming her into a “herculean” woman. Other women appear as warrioresses and huntresses, including Penthesilea, the queen of the Amazons; Virtus, the Roman goddess of “manliness”; Diana, the chaste goddess of the hunt; or Atalante, renowned for her role in the Kalydonian Boar Hunt. All of these women likewise take on garments and accessories predominantly associated with male figures in the visual record. This might initially seem surprising. Female-to-male cross-dressing was typically perceived as a transgressive act in Roman society; moreover, conventional portrait types tended to emphasize femininity, modesty, and passivity. As argued here though, these gender-b(l)ending features had the capacity to express particularly female forms of virtus (“manliness”), both on their own terms and in connection with other visual codes, which complemented their traditional female virtues in meaningful ways. These women are neither portrayed in a typically feminine way – as modestly draped, chaste, “weavers” – nor in a truly masculine way – as heroically nude “warriors”. Rather, their dress, as well as their pose, actions, and even their settings, opened up an imaginary space for so-called “weaving warrioresses”: these women are portrayed as strong, courageous, and virtuous, but this is ultimately connected back to their traditional female roles.

10 **WHERE ARE THE BRUNHILDS? WHAT CAN WEAPONS SAY ABOUT GENDER IN WIDER CENTRAL EUROPE IN LATE ANTIQUITY?**

Abstract author(s): Hrušovská, Barbora (Masaryk University)

Abstract format: Oral

The topic of women burials with weaponry is becoming more resonant thanks to the latest methods of determining the gender of the deceased. In this regard, the discovery from Birka supported by DNA analysis from 2016, caused a great controversy. Based on the analysis of graves containing weapons from the 5th and 6th century in wider Central Europe, as part of student’s dissertation, contribution aims to provide the insight into the current interpretation possibilities and an approach to the question of the connection between the grave inventory and the gender of the buried. In general, archaeology captures the phenomenon of the women with weapons during the Migration Period as a distinctly minority manifestation. This situation can be partly caused by the outdated archaeological determination of gender, since for a long time weapons were viewed as an exclusively male matter. This principle makes the very existence of the female graves with weapons impossible and may at least partially explain why the current record for these burials is so meager. Due to the difficulty of resources, we will follow the phenomenon mainly on the basis of anthropological analyses, with the obvious consideration of the possible shortcomings of the given method. The attention will largely be focused on the overall content of the grave equipment of the individual female graves and will also provide us with the opportunity to observe the possible equivalent grave equipment of individuals with the anthropologically determined male sex. This approach can, thus, verify the validity of gender stereotyping of some types of the subjects. Although, current archaeology for male graves with weapons allows for a wider range of different explanations and interpretations, including warrior status, for female graves with the same weaponry this principle has not been implemented and as such remains a problem.

Abstract author(s): Eriksen, Marianne Hem (University of Leicester)

Abstract format: Oral

It is oxymoronic that while sexuality is a foundational part of being human, we rarely talk about it in the past. ‘Whole beings of the past...cannot be comprehended, imagined, or interpreted unless their sexuality is regarded as basic to their...subjectivity as real persons’, argues Fuglestedt (2014). Yet, while some scholars of the first millennium argue that the power and qualities of leaders in the Iron and Viking Ages was deeply entangled with sexuality (Hedeager 2011; Solli 2008), there has been limited study of sexuality writ large. Sexuality is still seen as outside the remit of archaeology for most scholars, and therefore as a high-risk (or even risqué) topic to embark on, but one where the potential to develop new knowledge and a new discourse is significant. Sexuality is, as noted by Voss (2008), not only about interpersonal relationships or identity: sexuality intersects, feeds into, and is part of as diverse topics as state formation, economic systems, and religion.

How was sexuality, and especially women’s sexuality, understood in the Late Iron and Viking Ages, beyond reproduction? This paper investigate sexualized objects, historical sources describing sexual acts and violence, and depictions of sexual bodies, in order to explore Iron and Viking Age sexual imagery, ritualized sexuality, and sexual exploitation. In Iron and Viking Age studies, the sexual aspects of the ritual practice seiðr has generated relatively high scholarly attention including its interlinks with the concept ‘ergi’ denoting men taking an effeminate or passive sexual role. Yet this has not been incorporated in the political narratives of the period, but rather been placed in a separate discourse on ritual. In Foucauldian terms, sexuality is a complex political technology. How did politics of sex and the body relate to large-scale social and political development in these societies?

PLEISTOCENE LITHIC RAW MATERIALS CHARACTERIZATION TO INTERPRET MOBILITY PATTERNS AND SETTLEMENTS DYNAMICS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Gómez de Soler, Bruno (Institut Català de Paleoeologia Humana i Evolució Social - IPHES); Universitat Rovira i Virgili) - Soto, María (Madrid Institute for Advances Study; Departamento de Prehistoria y Arqueología, Universidad Autónoma de Madrid) - Favreau, Julien (Department of Anthropology, McMaster University)

Session format: Regular session

Lithics represent one of the best lines of evidence to investigate human-environment interactions over time and space as Pleistocene toolmakers focalized a significant amount of their activities around raw material sources, which remain, by and large, observable in the present-day.

Seminal ethnoarchaeological studies have established that hunter-gatherers can be characterized as foragers and collectors according to their mobility, settlement, and subsistence practices. In turn, this has allowed archaeologists to classify site functions according to behavioral information, cultural traditions, and the distribution of natural resources.

Recent advances in the characterization of lithic raw materials have identified the utility of multi-scalar approaches to derive practical information. A combination of macro-/microscopic analytical methods complemented with geochemical analyses represents an ideal means by which archaeologists can glean deeper insights into the provenance, exploitation, and management of raw materials, which can have the overall effect of facilitating the identification of prehistoric mobility patterns and settlement dynamics.

In this session, we want to bring together specialists from across sub-disciplinary boundaries irrespective of time periods, regions, or rock types to serve as a forum to improve lithic raw material studies and expand upon the inferential insights they can offer.

1 OLDOWAN RAW MATERIAL SOURCING AND EVIDENCE FOR MOBILITY AT EWASS OLDUPA (OLDUPAI GORGE, TANZANIA)

Abstract author(s): Favreau, Julien (Department of Anthropology, McMaster University) - Cueva-Temprana, Arturo (Department of Archaeology, Max Planck Institute of Geoanthropology) - Soto, María (Madrid Institute for Advanced Study; Departamento de Prehistoria y Arqueología, Universidad Autónoma de Madrid) - Durkin, Paul (Department of Geological Sciences, University of Manitoba) - Hubbard, Stephen (Department of Geoscience, University of Calgary) - Bushozi, Pastory (Department of Archaeology and Heritage Studies, University of Dar es Salaam) - Mercader, Julio (Department of Archaeology, Max Planck Institute of Geoanthropology; Department of Geoscience, University of Calgary; Department of Anthropology and Archaeology, University of Calgary; Institut Català de Paleocologia Humana i Evolució Social) - Carter, Tristan (Department of Anthropology, McMaster University; School of Earth, Environment & Society, McMaster University)

Abstract format: Oral

The totality of high-impact discoveries together with years of coordinated fieldwork by multiple research teams have positioned Oldupai Gorge (Tanzania) as a premier reference site for the investigation of hominin behaviour during the Pleistocene. Here, we present our research on the raw material sourcing from the oldest Oldowan site in the area known as Ewass Oldupa and offer evidence for mobility patterns. Systematic excavations have revealed that hominins recurrently occupied the site between ~2.0-1.8 Ma despite profound fluctuations in depositional environments. This is evidenced by Oldowan tools associated with meandering streams atop a volcanoclastic fan, mass flows, transgressive and regressive lacustrine cycles, and shifting fluvial systems. Palaeoenvironmental reconstructions across the stratigraphic sequence have shown the existence of fern meadows, woodland mosaics, palm groves, naturally-burned landscapes, and hyper-xeric steppes. Faunal remains retrieved in proximity to Oldowan tools include bovids, suids, equids, leporids, felids, hyaenids, hippopotami, crocodiles, turtles, birds, and cercopithecids. However, analyses of bone surface modifications indicate that hominins were not the primary accumulators of fauna. Stone tools include cores, spheroids, flakes, and retouched pieces manufactured on volcanic and metamorphic rock types with minimal evidence of technological variation through time. The geochemical characterisation of regional rock types using ED-XRF spectroscopy indicate that there are detectable differences at the inter-source scale. Comparative analyses of geological and artefactual data sorted by macroscopic categories allow for the probabilistic identification of raw material sources with accuracies ranging between 75-100% using computational statistics. Overall, our results indicate that the site's Oldowan toolmakers maintained a diversified supply of raw materials irrespective of palaeoenvironmental changes and clearly selected for specific varieties of quartzite. Moreover, hominins evidently ranged across the palaeobasin in patterned ways as a significant amount of stone tools is attributed to sources ~12 kilometres away while some artefacts imply even longer transport distances.

2 FLINT SOURCES OF HANDAXES FROM THE LATE ACHEULEAN SITE OF EVRON (ZINAT), WESTERN UPPER GALILEE, ISRAEL: IMPLICATIONS FOR PROVENANCE STUDIES

Abstract author(s): Finkel, Meir (Tel Aviv University) - Ben Dor, Yoav (Geological Survey of Israel) - Barkai, Ran - Gopher, Avi - Ben Yosef, Erez (Tel Aviv University) - Sharon, Gonen (Tel Hai College) - Agam, Aviad (Tel Aviv University)

Abstract format: Oral

The Acheulean site of Evron, which includes three localities (Quarry, Zinat, Pardes), is situated in the Western Galilee coast of Israel. More than 500 handaxes were retrieved from the Late Acheulean Zinat locality, from surface and from shallow excavation trenches. No flakes were found and no raw material sources is known from the vicinity of the site. Hence it was suggested that the handaxes produced near the raw material source and imported to the site as finished tools (Gilad & Ronen, 1977). Here we present ICP-MS based composition geochemical analysis of 11 handaxes from Zinat locality (and one from Early Acheulian Quarry locality). The results are compared to various potential flint sources in the Western and Central Upper Galilee which were identified in previous surveys. These localities have nodule size sufficient in size and morphology for the production of an Acheulian handaxe. The results attest to at least two different sources from which the raw material was obtained, one of an Eocene origin and one of a Cenomanian age. Both are located c. 10 km from the site. These results suggests good knowledge of the environment, long distance range of direct procurement strategy and selectivity of the raw material by its properties. The new data broaden our previous knowledge regarding flint provenance during the Lower Paleolithic from the Central and Eastern Upper Galilee, into the Western Galilee.

3 LOGISTICAL OR FORAGING MOBILITY? NEANDERTHAL TERRITORIAL MANAGEMENT STRATEGIES IN THE NE OF THE IBERIAN PENINSULA

Abstract author(s): Gómez de Soler, Bruno (Institut Català de Paleoecologia Humana i Evolució Social - IPHES); Universitat Rovira i Virgili - URV) - Muñoz del Pozo, Alicia (Universidad de Zaragoza - UNIZAR; Institut Català de Paleoecologia Humana i Evolució Social - IPHES) - Chacón, M. Gema (Institut Català de Paleoecologia Humana i Evolució Social - IPHES; Universitat Rovira i Virgili - URV; UMR7194 – HNHP - CNRS – MNHN – UPVD – Sorbonne Universités, Musée de l’Homme) - Allué, Ethel - Blasco, Ruth (Institut Català de Paleoecologia Humana i Evolució Social - IPHES; Universitat Rovira i Virgili - URV) - Rivals, Florent (ICREA; Institut Català de Paleoecologia Humana i Evolució Social - IPHES); Universitat Rovira i Virgili - URV) - Rosell, Jordi (Universitat Rovira i Virgili - URV; Institut Català de Paleoecologia Humana i Evolució Social - IPHES) - Rufà, Anna (ICArEHB – Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, Universidade do Algarve; Univ. Bordeaux, CNRS, MCC, PACEA, UMR 5199) - Saladié, Palmira - Vallverdú, Josep (Institut Català de Paleoecologia Humana i Evolució Social - IPHES; Universitat Rovira i Virgili - URV)

Abstract format: Oral

As Binford (1980) established, logistical and foraging strategies are the main mobility patterns among hunter-gatherer groups. Through the example of the Abric Romaní and Teixoneres cave, two Middle Paleolithic sites from MIS3 in the NE of the Iberian Peninsula, we will try to define the mobility patterns practised by the Neanderthals in each of these sites through the lithic procurement strategies and the type of occupation.

The two sites are about 50 km away and both are located on the east bank of the Catalan Central Depression, with the Montserrat mountains in between and in contact with the Prelittoral range. At Abric Romaní level M, chert is the most used raw material. Its main procurement area is located at 16 km (Sant Martí de Tous chert type), indicating different procurement strategies within a main mobility pattern based on a foraging radius in which the site is considered a residential camp. On the contrary, Teixoneres cave level III, with quartz and chert as the main raw material, has an immediate catchment area (quartz pebbles are abundant in the surroundings whereas chert nodules are found not beyond 12 km). The type of occupation in the site reflects - following Binford -, a field camp and suggests a mobility pattern as a part of a logistical system.

The fact of having two sites of similar chronology (ca. 50 ka BP) with, a priori, a diverse settlement pattern and mobility, provides an ideal framework for a first approach and to consider whether they are the consequence or not of the same subsistence-settlement system in the territory. We will try to deal with this issue and elucidate what territorial mobility strategy Neanderthals carried out in the NE of the Iberian Peninsula.

4 RAW MATERIALS: CAN THEY BE THE KEY TO UNDERSTANDING THE MOBILITY PATTERNS OF NEANDERTHALS? THE CASE OF TEIXONERES CAVE

Abstract author(s): Muñoz del Pozo, Alicia (Universidad de Zaragoza - UNIZAR, Departamento de Ciencias de la Tierra; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Departament d’Història i Història de l’Art) - Gómez de Soler, Bruno (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Departament d’Història i Història de l’Art) - Bustos-Pérez, Guillermo (Universidad Autónoma de Madrid - UAM, Departamento de Prehistoria y Arqueología. Facultad de Filosofía y Letras; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Departament d’Història i Història de l’Art) - Chacón, María (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Departament d’Història i Història de l’Art; UMR7194–HNHP - CNRS–MNHN–UPVD–Sorbonne Universités, Musée de l’Homme) - Picin, Andrea (Alma Mater Studiorum-Università di Bologna, Dipartimento di Chimica “G. Ciamician”) - Blasco, Ruth (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Departament d’Història i Història de l’Art) - Rivals, Florent (ICREA; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Departament d’Història i Història de l’Art) - Rufà, Anna (ICArEHB – Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, Universidade do Algarve; Univ. Bordeaux, CNRS, MCC, PACEA, UMR 5199, F-33600) - Rosell, Jordi (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Departament d’Història i Història de l’Art)

Abstract format: Oral

Teixoneres Cave (Moià, Barcelona) is situated in the northeast of Iberia at 760 m a.s.l. in the highlands located between the Llobregat, Congost and Ter rivers, at the east, west and north respectively, connecting the inner part of the Catalanian region with the Mediterranean Sea. It forms part of the Toll Cave karstic system developed on sedimentary materials from the margin of the Central Catalan depression, in the Neogene limestones of the Collsuspina formation. The cave has been filled with Pleistocene sediments with a range between approximately 200 and 16 ka BP.

In this paper we focus on the macroscopic and microscopic analysis of the lithic raw materials from sub-unit IIIb (MIS 3) to determine its procurement areas and consequently establish the mobility patterns of the Neanderthals that occupied Teixoneres cave.

The main components of the lithic industry are quartz, followed by chert, and to a lesser extent, quartzite, hornfels and limestones. Quartz is collected within a 5 km-radius. The predominant chert variety (50% of the total chert) has a geological origin from the Muschelkalk formation. Its procurement was directly from its primary source, which is estimated to be located approximately 15 km to the east. Metamorphic rocks seem to come from secondary deposits, mainly the Congost river and its tributaries, 10 km to the east. Finally, limestones are obtained from the surroundings of the site. This suggests that the Neanderthal groups occupying Teixoneres cave had a wide range of mobility and were able to access different lithic raw materials from multiple sources.

5 DECODING THE TERRITORIAL ADAPTATION AMONG 'HOMO SAPIENS' THROUGH LITHIC RAW MATERIALS EXPLOITATION

Abstract author(s): Soto, Maria (Madrid Institute for Advanced Study.; Departamento de Prehistoria y Arqueología, Universidad Autónoma de Madrid) - Morales, Juan (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Àrea de Prehistòria, Universitat Rovira i Virgili - URV; SERP, Departament d' Història i Arqueologia, Universitat de Barcelona) - Aouraghe, Hassan (Université Mohammed Premier, Faculté des Sciences, Département de Géologie) - Sala-Ramos, Robert (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA) - Chacón, M. Gema (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Àrea de Prehistòria, Universitat Rovira i Virgili - URV; UMR7194 - HNHP - CNRS - MNHN - UPVD - Sorbonne Universités)

Abstract format: Oral

Mobilithics is a project exploring the exploitation of lithic raw materials among 'Homo sapiens' for understanding our territorial adaptiveness to various environmental, cultural, and biological conditions. The hypothesis of the project is that the rapid expansion and evolutionary success of our species were driven by our behavioral flexibility and diverse responses to territorial and ecological challenges.

The project endeavors a multi-scalar characterization of the lithic raw materials exploitation in two different areas, the Ain Beni Mathar - Jerada - Guefait basin (Eastern Morocco) and the Catalan Coast Range (Northeast of the Iberian Peninsula) during the Upper Pleistocene to gain a comprehensive understanding of the diachronic changes and their significance.

The discovery and excavation of several stratified open-air sites such as Sabh el Ghar 1, 2, or Tahya 3 and 4 in Eastern Morocco are offering novel sequences and material culture associated to the Middle and Later Stone Age. The lithic assemblages demonstrate technological changes, including the transition from flake to bladelet production strategies. The settlement patterns show a progressive association with fluvial deposits, likely as result of the significant climatic fluctuations occurring during the Upper Pleistocene that influenced the distribution of the resources across the landscape.

The Catalan Coast Range represents a key region to understand the expansion of our species, as it preserves the last evidence of the 'Homo neanderthalensis' and its substitution by modern human groups. A novel technological and biological scenario of the Middle to Upper Palaeolithic transition is represented by recently discovered sequences such as Cova Foradada, La Griera (Calafell) or Cova del Trader (Cubelles).

Systematic geoarchaeological surveys and sampling, elaboration thematic cartography through GIS, macroscopic, petrographic and geochemical analysis (Raman, EDS, and EDXRF) and multivariate statistics are being applied to determine the palaeoeconomic strategies to different paleoenvironmental, cultural and even biological scenarios.

6 MINERAL PIGMENT PROVISIONING AND LONG DISTANCE TRANSPORT IN STONE AGE ESWATINI

Abstract author(s): MacDonald, Brandi L (Archaeometry Lab, University of Missouri Research Reactor) - Bader, Gregor (Senckenberg Centre for Human Evolution, Universität Tübingen) - Velliky, Elizabeth (Centre for Early Sapiens Behavior, University of Bergen) - Forrester, Robert (Eswatini National Trust Commission) - Linstädter, Jörg (Deutsches Archäologisches Institut) - Riedesel, Svenja (University of Cologne) - Kuo, Alexandra (Archaeometry Lab, University of Missouri Research Reactor)

Abstract format: Oral

Earth mineral pigments, including iron and manganese oxides, were mined, transported, and used throughout the Middle Stone Age (MSA) and Late Stone Age (LSA) in Eswatini, southern Africa. This region is home to one of the earliest and longest used sites of iron oxide collection, Lion Cavern at the Ngwenya ochre mine, signaling a longstanding relationship with this mineral resource. Our study uses a multi-method approach to artifact provenance, including

elemental (neutron activation analysis, mass spectrometry, X-ray fluorescence), and mineral and structural (X-ray diffraction, electron microscopy, Raman spectroscopy) techniques to understand the composition, manipulation, and geologic origins of the mineral pigment assemblages. Here, we contextualize the results from our multi-site investigation of artifacts and mineral pigment sources, which has revealed networks of provisioning, long-distance transport, and use. Our study provides new insights into changing patterns of mobility and mineral pigment preferences during the Middle and Late Stone Ages in Eswatini.

7 **GEOLOGICAL KNOWLEDGE AND CONTEXTUAL DECISION-MAKING: ISSUES FOR RAW MATERIAL CHARACTERIZATION AND INTERPRETING PAST PRACTICES OF RAW MATERIAL SELECTION**

Abstract author(s): Thacker, Paul (Wake Forest University)

Abstract format: Oral

Integrating lithic provenance and characterization data with models of Late Pleistocene raw material economies requires building archaeological theory. The transport of stone over distance from a geologic source is significantly influenced by numerous variables including the function and use-life of specific artifacts, changing hunter-gatherer task needs, and the geographic range of group movements. Archaeologists should not assume a priori that the taxonomies and descriptors of stone composition, hardness, fracture properties, and other attributes established from contemporary geological science are comparable to the knowledge and material qualities that were important to past knappers. This paper explores the interface of technology, raw material selection, and the organization of hunter-gatherer settlement systems by intensively focusing on the local and site-level context of knapping decisions at a series of Middle and Upper Paleolithic open-air sites in central Portugal. Middle Paleolithic assemblages reveal a flexible technological organization with only a slight preference for quartz within an overall pattern of raw material equivalency. A very different pattern emerges in the Upper Paleolithic at sites such as Espadanal, where chert and quartz cobbles were selected for the manufacture of different tool forms and to perform different tasks. The two distinctive EUP chaînes opératoires are untethered from near-site raw material availability, a conclusion made possible by characterizing occurrence frequencies and size variation of local cobbles. Detailing the raw material variability present at the local/site level reveals the choices made by knappers and the value attributed to raw material attributes as knowledge components of chaînes opératoires. The interpretive significance of long-distance sourcing in lithic analysis similarly relies upon exploring the geography of stone deposits and the cultural practices that mediate raw material availability not only at distant geological deposits but at the final use and discard locations of artifact deposition.

8 **CHERT PROVISIONING AND USE DURING THE UPPER PALEOLITHIC IN SOUTHWESTERN IBERIA: THE CASE OF VALE BOI**

Abstract author(s): Belmiro, Joana (ICArEHB, Universidade do Algarve) - Sánchez-Martinez, Javier (ICArEHB, Universidade do Algarve; CEPARQ-UAB, Universitat Autònoma de Barcelona) - Galfi, Jovan (ICArEHB, Universidade do Algarve) - Terradas, Xavier (CSIC-IMF) - Bicho, Nuno - Cascalheira, João (ICArEHB, Universidade do Algarve)

Abstract format: Oral

Hunter-gatherers relied strongly on lithic raw materials, making them essential to characterize mobility and land use, raw material provisioning, exchange, and technology. Identifying changes in these patterns through time is key to understanding how different groups adapted and reorganized their material culture, especially in the Late Pleistocene, marked by abrupt climatic changes that sometimes severely impacted human ecodynamics. Territories like Southwestern Iberia functioned as refugia for hunter-gatherer communities throughout this time, making it ideal for comprehensive diachronic studies. This is reflected in archaeological sites such as Vale Boi, an eco-cultural niche with one of the region's most complete Upper Paleolithic sequences (c. 32 ka to 15 ka cal BP).

With several substantial lithic assemblages—most of which have been studied—, proximity to chert raw material sources, and a complete lithotheque of regional comparative chert samples, Vale Boi is a key site to study the provisioning strategies and chert use throughout the Upper Paleolithic.

This paper presents the chert raw material analysis results from the UP levels of Vale Boi of two main excavation areas: the terrace and rock shelter. The archaeological chert artifacts were analyzed through a multi-component approach (macroscopic and petrographic analyses) and compared to a regional reference collection. Whenever existent, technological data was combined with the raw material results. This allowed the characterization of hunter-gatherer mobility and economic and technological organization across time.

9 PROCUREMENT AND SELECTION OF THE COLOURING MATERIALS AT THE LATE EPIGRAVETTIAN SITE OF RIPARO TAGLIENTE (MONTI LESSINI, NORTH-EASTERN ITALY)

Abstract author(s): Sardelli, Giorgia (University of Ferrara; Université Savoie Mont Blanc, EDYTEM Laboratory – UMR5204) - Fontana, Federica (University of Ferrara) - Salomon, H el ene (EDYTEM Laboratory – UMR5204) - Zorzin, Roberto (Museo Civico di Storia Naturale di Verona)

Abstract format: Oral

Ferruginous colouring materials are one of the most exploited mineral resources during the latest part of the Pleistocene in Europe. Thanks to their wide fields of utilisation, such materials reflect the technical, economic and symbolic practices of human groups. For these reasons, investigation on the provenance, selection, and treatment of ferruginous colouring materials can provide an important contribution to understanding land use, resource management strategies and the technical practices adopted by Late Epigravettian hunter-gatherers in newly accessible territories after the end of the Late Glacial Maximum (LGM).

With this aim, we have investigated the cohesive iron-rich colouring materials of the Late Epigravettian sequence (13.986±60 BP – 12.040±170 BP) of Riparo Tagliente (Verona, NE Italy). This site represents the first human re-occupation of the Alpine region after the end of the LGM.

By applying a multi-scalar analytical approach, we have examined the ferruginous rocks recovered from the Northern sector of the site, characterised by dwelling structures, and from the trench, that documents the whole Late Epigravettian sequence from a diachronic perspective.

The results of macroscopic, mesoscopic and microscopic observations and analyses of the archaeological remains allowed us to identify the selection criteria of the exploited colouring materials among those offered by the local outcrops, along with their potential provenances. We gained also the first insights into the changes in the selection criteria during the Late Epigravettian at Riparo Tagliente.

10 ACQUISITION AND USE OF LITHIC RAW MATERIALS IN THE PLEISTOCENE-HOLOCENE TRANSITION: COVES OF SANTA MAIRA (CASTELL DE CASTELLS, ALICANTE, SPAIN)

Abstract author(s): Vadillo Conesa, Margarita - Aura Tortosa, J Emili (Universitat de Valencia) - Molina, F. Javier (Independent researcher) - Tarr i no, Andoni (Universidad del Pa s Vasco- EHU) - Carbayo Mart inez, Isabel A. (Independent researcher)

Abstract format: Oral

Coves de Santa Maira site is located in the central Mediterranean region of the Iberian Peninsula, about 30 kilometres from the present-day coast. Its occupations dated to ca. 14.5 - 10 ka cal BP have allowed us to analyze how climatic fluctuations affected the techno-economic evolution and mobility of human groups who occupied the site in this chronology. In this contribution, we present the results of the analysis of the raw materials used in the Epipalaeolithic lithic debitage productions, dated between the Younger Dryas and the beginning of the Holocene, and which are mainly intended for the configuration of projectile armatures. The results provide insight into the ways in which the lithic raw materials were collected and their relationship with the long laminar-microlaminar technological tradition that began in the Magdalenian period and which shows clear signs of transformation with the Early Mesolithic, known regionally as the notches and denticulates industries.

11 THE DOMESTICATION OF FLINT. 35 YEARS AFTER MORTENSEN

Abstract author(s): Thomalsky, Judith (German Archaeological Institute)

Abstract format: Oral

According to A. Leroi-Gourhan, the flint tool is a technological consequence of becoming human. Moreover, lithic artefacts are regarded as major tool category for the deciphering mental evolution of human intelligence and decision-making through time. Different modes of acquisition and consumption of the raw material, as well as distinguished techniques in tool-manufacture let us understand the social-economical lifestyle of the community and hence resultant socio-technological identity. Lithic tools can be regarded as a highly-dynamic artefact group that underwent specific influences of social organization, such like mobility, economy, or social networks. The homo faber as tool producer, however, is subjected in his technological choices to his direct social environment, rather than influenced by technological determinism or natural paleo-landscape. This concept can help to understand the significant variety in tool technology that exists from Late Paleolithic time onwards. Contextual analyses provide “activity zones” and the development towards standardized and specialized production which implicate the begin of complex societies. This is what Peder Mortensen called “the domestication of flint” (1988), and emphasized as a major aspect of the neolithization process. This contribution will follow the given pathway along selective case studies from Europe and Western Asia, in order to localize a probable temporal set up and starting point of this technical evolution.

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Watteaux, Magali (University Rennes 2; Research Unity) - Turner, Sam (Newcastle University; Centre for Landscape) - Citter, Carlo (University of Siena) - Hajnalova, Maria (Department of archaeology, Faculty of Arts, Constantine the Philosopher University in Nitra)

Session format: Regular session

Agrarian parcels are a fundamental and age-old dimension of rural areas. Studying them allows us to: (i) understand the spatial and temporal variability of land use in rural areas according to the specificities of geographical environments and to social needs; (ii) extend the notion of heritage to the agrarian structures still visible in the European countryside; (iii) demonstrate that they constitute a useful research object for thinking about the sustainability of current development projects in rural areas.

However, studying field boundaries – which are still in use, but also abandoned and fossilised – is not exactly the same as studying a normal archaeological structure or site. For example, in 2008 UNESCO classified a Greek ‘centuriation’ on the island of Hvar (Croatia) as a World Heritage Site, on the basis that it had remained ‘practically intact’ since the fourth century BC, testifying to the ‘permanence’ and ‘durability’ of land use systems and land tenure rules. While this desire to protect this heritage is legitimate, the argument nevertheless bears witness to a fixed conception of plot forms, which ignores the weight of time, passing off as fossil and authentic (ancient Greek) what is in fact the result of more than two thousand years of adaptation by the different societies living on this island.

Archaeological and archaeogeographical studies of landscapes, on the other hand, make it possible to better evaluate the role of time and societies in the transmission of agrarian plots since the Bronze Age. Such research has shown that agrarian land parcels evolve over time in complex ways that combine the creation and reuse of inherited social and geographical forms.

The aims of this session are two fold i) to present archaeological studies on the theme of rural landscapes in order to shed light on the transformations and transmissions that affect the evolution of landscape forms in different European contexts in the long term and ii) to discuss the most suitable methods for reconstruction of individual field plot use histories.

ABSTRACTS

1 “HOW MUCH LAND DOES A MAN NEED?” RECONSTRUCTING THE SIZE OF A LATE NEOLITHIC FARMSTEAD IN ARCHSUM (SYLT, NW GERMANY)

Abstract author(s): Bilotti, Giacomo - Filipovic, Dragana - Brozio, Jan-Piet - Kerig, Tim (Kiel University)

Abstract format: Oral

At the site of Archsum on the island of Sylt (NW Germany), dated to the Nordic Late Neolithic (2300-1700 BC), remains of a residential structure (house) and two ploughed pieces of land (cultivated plots) were discovered very close to each other on a hillside, and with no other residential structures in their immediate vicinity. We hypothesise that the house and the plots, along with several other adjacent features and activity areas, represent a habitation and food production unit (farming household). We use this unique case of directly associated house and cropland to reconstruct the number of residents (based on the house floor area) and the size of crop yields under several different cultivation regimes. Using these calculations and select ethnographic information, we test various combinations of household’s demographic structure, labour estimation, cereal yields, and cereal dietary contribution, and present a range of scenarios with respect to the number of household members, their diet and the intensity of cultivation. These scenarios allow us to evaluate the relevance of different factors (dwelling space, labour required, productivity, consumption) to the reconstruction of socio-economic structure of the site Archsum. We conclude that, varied rates of production and dietary contribution of cereals should be considered as a major factor in further calculations of the size of household supported by cereal cultivation and the size of land needed for it.

2 MEDIEVAL COLONISATION AND THE ESTABLISHMENT OF A NORMATIVE (AGRICULTURAL) LANDSCAPE IN CENTRAL EUROPE

Abstract author(s): Žaža, Petr - Mazáčková, Jana (Masaryk University)

Abstract format: Oral

The mountains and highlands of the Czech lands were permanently settled and transformed into cultural landscape during the High Middle Ages. In this presentation, this will be demonstrated on the example of the former Brtnice Lordship (Czech Republic). This newly settled area represents a suitable landscape segment for studying the es-

tablishing of settlements, their hinterland, as well as the influence of the landscape on the new anthropogenic relief under the control of its inhabitants. The archaeological evidence for adaptation and crises of the settlements (i.e., the disappearance of villages and castles/strongholds) and the secondary exploitation of their hinterland, and in some cases the disappearance of these hinterlands and their afforestation, constitutes a broad base of data on the evolution of the landscape from the late 12th century onwards. Since their foundation, the villages have used a parcel system that anchored their economic hinterland, and which can be studied archaeologically. For this reason, changes in the character of the village hinterland over time (its expansion or degradation) can be documented. Preliminary results point to the invariability of the parcellation of the landscape and its codification by the Stable cadastre in the first half of the 19th century. The strategies of the owner of the Lordship significantly defined the development of parcellation and allowed the development of different economies, although the basic economy was still agriculture even at the time of the dissolution of manorial system in the Austrian Empire in 1848. The involvement of various types of sources (archaeological, historical, etc.) has yielded significant data on the appearance of the studied landscape in the former Brtnice Lordship, which, in combination with the C14 data, push back the origin of the parcellation to the second half of the 12th century, almost a hundred years earlier than originally assumed.

3 THE PLUŽINA FIELDS SYSTEM IN THE CZECH REPUBLIC - THOUGHTFUL AND LANDSCAPE CHANGING

Abstract author(s): Šitnerová, Ivana (Laboratory of Archaeobotany and Palaeoecology, Faculty of Science, University of South Bohemia; Institute of Archaeology, Faculty of Arts, University of South Bohemia) - Beneš, Jaromír (Laboratory of Archaeobotany and Palaeoecology, Faculty of Science, University of South Bohemia) - Majerovičová, Tereza - Bumerl, Jiří (Laboratory of Archaeobotany and Palaeoecology, Faculty of Science, University of South Bohemia; Institute of Archaeology, Faculty of Arts, University of South Bohemia) - Fanta, Václav - Janečková, Kristina (Faculty of Environmental Sciences, Czech University of Life Sciences Prague)

Abstract format: Oral

The historical agricultural fields in the Czech Republic are called plužina. The most often is plužina defined as an all agriculturally cultivated hinterland of villages. Their origin is dated to the Middle Ages and New Age – from 12th century to the 16th century and they were created by locator directly during the foundation of villages. There are several shapes of plužina in the Czech Republic. It is confirmed that each type reflects specific environmental condition, the floor plan of the village and the social structures of peasants. For example, segmental plužina is typical for villages founded during early medieval period and the most common type – the croft plužina – is characteristic of late medieval colonisation and it is connected to forest line villages.

In last five year we had a project focused on the plužina fields systems in the Czech Republic. The main goal to this project was create a database of all exists plužina and got some archaeological and historical information about them. It will lead to the systematic record based on this information, because it is missing so far and due to it missing also their protection.

Thanks to the archaeological excavations and radiocarbon dating was confirmed almost all plužina systems falls into the time of adjacent village foundation. The most interesting founding during the excavation was discovering of basis of construction of hedgerows, which are boundary belts between each single fields. This construction was man made and showed the thoughtful work of all peasant communities. People reduced the slope and provided good conditions for water regime. The construction of agrarian fields was a big, planned activity which transformed whole landscape in village surroundings.

4 ANCIENT AGRICULTURAL LANDSCAPES IN POLAND

Abstract author(s): Jakubczak, Michal (Insitute of Archeology and Ethnology, Polish Academy of Sciences)

Abstract format: Oral

The ISOK project involved LiDAR scanning of the valleys of Poland's largest rivers, which began in 2010. In the end, the entire territory of Poland has been scanned as part of the project. The obtained data, in the form of DTM and measurement data, are available for free. As a result, there was an outbreak of archaeological discoveries in forested areas. Initially, archaeologists focused mainly on hill forts, burial mounds and flint mines, but as time went by, the attention of researchers was also drawn to less spectacular landscape features, such as charcoal piles or remnants of arable fields. Until recently, no complex of the "celtic fields" type was known from the territories of Poland. Currently, thanks to the work of researchers and amateur archaeologists, we know almost 500 complexes of arable fields preserved in the terrain and visible on LiDAR data. Comprehensive interdisciplinary archaeological work has only been carried out at one site in the Białowieża Forest, and even then only to a very limited scope. As a result, archaeologists urgently need further research focusing on chronology, morphological patterns, genesis, and settlement-field inter-relationships. It also confronts heritage services with the difficult problem of inventorying and protecting such a large number of sites.

In this paper I would like to present an overview of the current state of research on the remains of arable fields in Poland, as well as the needs and difficulties involved.

5 LAND OWNERSHIP AND THE PALAEOENVIRONMENT IN A LONG DURÉE PERSPECTIVE: FIRST RESULTS OF AN ARCHAEOGEOGRAPHICAL APPROACH IN THE GROSSETO AREA

Abstract author(s): Grosso, Simone (Université Paris 1 Pantheon Sorbonne; Service Départemental d'archéologie du Val d'Oise) - Patacchini, Andrea (University of Siena)

Abstract format: Oral

The territory surrounding the medieval city of Grosseto (Tuscany, Italy), founded in the 7th century, can be divided into two distinct zones: to the west, an alluvial and originally marshy plain, dedicated to the cereal cultivation and breeding; to the east, a hilly area dedicated to pasture and transhumance. Thanks to a broader project research on agrarian landscapes, PARCEDES, funded by the French "Agence Nationale de la Recherche", we have worked on this area to understand the history of these different landscapes. One of the aims of this project and, more specifically of this intervention, is to analyse these two different landscape realities from an archaeogeographical point of view and to compare them thanks to the study of the legal possession of land, their agricultural exploitation and changes of agrarian morphology in a longue durée chronological perspective (more precisely from Roman period to the 20th century). The georeferencing and vectorisation of the 19th-century cadastre, combined with the study of the real estate registry and the comparison with ancient sources, allowed to gain a precise spatial outlook of the land ownership and to identify its main transformations between the Middle Ages (especially the Papacy and the nobility) and the modern age (local church, nobility and privates). On the other hand, the analysis of the cadastral forms and structure of land parcels and toponyms made it possible to obtain more information on the relationship between legal land tenure and the paleo environmental characteristics of the place, especially about the processes of land reclamation in the lowlands. The outcome of this multi-source analysis is to understand the evolutionary trajectories that have affected the two sectors and are at the origin of today's landscape.

6 FIELD PATTERNS AND LAND USE DYNAMIC OVER TIME. ABOUT THE PARCEDES PROJECT

Abstract author(s): Watteaux, Magali (University of Rennes 2)

Abstract format: Oral

The project PARCEDES is funded by the French national agency of research (ANR) during 2022-2024 to study the organisation and evolution of agrarian allotment (plots of land) from Protohistory to the present day, based on four European areas: in France (Vendée and Nîmes), Italy (Grosseto) and England (Devon). The aim is to identify and to characterise the possible links between the changes of field patterns in time and societal and geographical parameters, and to study the phenomena of resilience of field boundaries in the long term. Largely based on the advances of French Archaeogeography, which evaluates the part of transformations and transmissions that affect the forms of landscapes, the project PARCEDES wishes to remove three scientific and methodological obstacles: (i) to solve the problem of the great dispersion and heterogeneity of the available data by making up archaeogeographical maps for each area, based on the compilation in a GIS of old and recent maps, cadastres, aerial photographs and archaeological data (especially preventive archaeological data in France); (ii) to go beyond local studies closed in on themselves by a comparative approach and a harmonised methodology; (iii) to improve the knowledge of agrarian earthworks by dating ten of them in Devon thanks to an innovative archaeometric method (OSL-Profiling & Dating).

In the long term, this work wishes to contribute to strengthening research on historical agrarian morphologies, in particular in preventive archaeology, whose legacies still permeate today's countryside, and to aware managers of heritage and contemporary territories showing that land parcels, far from being insignificant, are useful for thinking about the sustainability of development projects and that their history is worthy of being recounted and integrated in order to build the resilience of contemporary territories.

7 LANDSCAPE DYNAMICS IN NÎMES (GARD, FRANCE). ALLOTMENTS AND ROADS FROM THE IRON AGE TO THE MODERN PERIOD

Abstract author(s): Sejalon, Pierre (INRAP - National Institute for Preventive Archaeological Research) - Grosso, Simone (SDAVO)

Abstract format: Oral

The existence of Roman monuments, still standing in the city of Nîmes has caught the attention of scholars and researchers for a long time. From the supervision of construction sites to preventive excavations, the city has been the subject to systematic monitoring by the State Archaeological Services.

At the same time, since the end of the 1990's, a Flood Protection Plan and the development of Commercial Activity Zones (Zone d'Activité Commerciale) have had a major impact on the plain located to the south of the city. Large areas have been diagnosed by Inrap archaeologists using the standard methods of French archaeology.

Several pathways led from the oppidum across the countryside to the other main settlements of the time. The first rural establishments, bounded by ditches, will develop along this road network.

During the Republican phase, the number of rural farms is beginning to decline, but their individual size increases significantly. Around them, ditch networks that seem to delimit fields are created.

During the Roman period, settlements are erected all over the plain, leading to the creation of new allotments. We are questioning the influence of Roman cadastration on the organisation of these limits.

As part of the research project PARCEDES, our goal was to study all the ditches, discovered during the numerous diagnoses and to establish a database in order to be able to study the dynamics of this structuring of the landscape around Nîmes.

Thanks to the geo-referencing of the Napoleonic cadastre and few discoveries of remains from the Middle Ages, it will also be possible to continue the analysis until the modern period and to point out the resilience of plots of land, which could be at the origin of today's landscapes.

8 RECONSTRUCTING LOST AGRARIAN LANDSCAPES USING A MULTI-PROXY, LONGUE DURÉE APPROACH (WEST JUTLAND, DENMARK)

Abstract author(s): Søvsø, Morten (Museum of Southwest Jutland)

Abstract format: Oral

In the 19th C. vast areas on the heathlands of West Jutland held remains of abandoned, prehistoric field systems in the form of so-called Celtic fields. The arable land around the existing villages of the time was laid out as ridge and furrow field systems.

Since then, close to 100% of the former heathlands have been cultivated and most remains of Celtic fields are completely lost today. A few are vaguely traceable either on aerial photos from the mid-20th C. or as arid marks preserved underneath the present-day plough-soil. Modern ploughing has also erased the many small strips of ridge-and-furrow fields from the face of the earth.

The paper demonstrates how this lost agrarian landscape can be reconstructed using historical maps and written sources. It allows a close to 100% accurate reconstruction of both field systems and the surrounding heathlands, meadows, and streams as they appeared in 1683.

Museum of Southwest Jutland have worked together with metal detectorists since the 1980's. Today more than 7.000 finds are in the museum database with find spots.

Around the expanding, modern town of Esbjerg, lots of large-scale excavations have been conducted since the 1980's. In many cases the history of an agrarian village can be traced (with ups and downs) from the Early Modern period back to its origins in the Pre-Roman Iron Age.

It will be demonstrated how the distribution of both metal finds (1st-2nd millennium AD) and excavated settlement remains correlates with the agrarian landscape of 1683.

This multi-proxy approach using historical maps, written sources, metal detecting and archaeological excavation exposes the longue durée and seems to tell the same story for every village in (at least) Western Jutland.

9 THE RURAL LANDSCAPE OF THE UPPER TAMMARO VALLEY BETWEEN TRANSFORMATION AND PERSISTENCE. (BENEVENTO, CAMPANIA REGION, ITALY)

Abstract author(s): Cerbone, Oriana (Univeristy of Salerno)

Abstract format: Oral

The rural landscape took into account for this study is the upper valley of the Tammaro river (Benevento, Campania region, South Italy) from the IV BC to the VI AD century.

This territory is characterized by several human occupations, remains of ancient roads connected to the Via Appia, and transhumance routes, some of them still in use today. In this rural and marginal territory some elements of the ancient landscape have survived in the plots of the current one, following the past agrarian structures, others, such as the river or the mountains, have influenced the future agrarian plots development. In some cases part of the ancient landscape has been removed due to time and use, leaving an echo in the continuity of use, which has reached our time.

The dynamic process of transformation of the landscape has involved anthropic and environmental components. Over time different systems of occupation and use have alternated, leading to a continuous transformation of agrarian structures not yet clear.

Archaeological research in this area began in the mid-1800s. However, the data available are varied and disorganised. Purpose of this study is to give uniformity to this data taking in account the global archeology and the historical-archaeological evolution of the landscape and their main components: the river, the valleys, the plains, transhumance routes and rural settlements.

The results of this study can be used for planning the development of the territory, implementing policies for the protection of cultural heritage, and supporting the various stakeholders in shared decisions and informed policies.

10 **DEVELOPING A GIS DRIVEN INTEGRAL EVALUATION MODEL OF EARLY MEDIEVAL CULTURAL LANDSCAPES FOR THE NEEDS OF SUSTAINABLE SPATIAL PLANNING**

Abstract author(s): Magdic, Andrej (Institute for the protection of Cultural Heritage of Slovenia)

Abstract format: Oral

Today, in times of radical social pressure, caused by environmental changes, effective spatial planning has become key to the sustainable management of the living environment. The protection of traditional cultural landscapes has proven to be an important step towards the sustainable approach to which modern society strives. In most of continental Europe, the beginning of continuous settlement and thus the formation of pre-industrial cultural landscapes can be traced back to the Early Middle Ages.

After the decline of the Roman empire and the almost total collapse of the lowland settlement, autarkic agricultural communities in the 6th and 7th centuries settled the plains and valleys of North-Eastern Slovenia. As we can say based on GIS analyses of physical geographical features of early medieval fields and agricultural tools found, permanent plowed fields in the area under research were established probably no later than the 8th century. As agricultural production, beside small flock herding, casual hunting and picking forest fruit, was the main food source of these communities, their subsistence strategy was to reduce the risk of total crop failure to a minimum. Therefore, individual settlements established their fields in ecologically mixed areas, with complex moisture conditions, where at least some crops would grow, despite unfavorable seasonally weather conditions.

In the last few decades pre-industrial cultural landscapes have been recognized as a social value all over Europe. Their preservation is carried out through evaluation and spatial planning procedures. However, in the evaluation are usually only taken into account the levels of field biodiversity, the preservation of folk architecture and of modern construction interventions. The criterion of “maximum yield with minimum energy input, while taking into account possible seasonal weather extremes”, which is crucial in a crisis situation, is not used in today’s spatial planning. The model presented here attempts to remedy this deficiency.

11 **CHANGES AND CONTINUITY IN A PRE-HISPANIC AGROECOSYSTEM OF WEST MEXICO FROM AD 500 TO AD 1500**

Abstract author(s): Dorison, Antoine (Paris 1 Pantheon Sorbonne University; CNRS ArchAm Archaeology of the Americas; CNRS ArScAn team Environmental Archaeologies)

Abstract format: Oral

From the beginning of the Conquest of Mexico, the Spaniards noted the omnipresence of agrarian features (e.g., terraces, wetland features) around the towns and villages of the New World. For the past 10 years, the reality of this integration of the agrarian component within the settlements, until then barely grasped by archaeologists, has been brought to light in a striking manner by the multiplication of LiDAR coverage throughout Mesoamerica, and models based on textual sources have been shaken up. Excavations of agrarian features remain rare and the dating of these contexts poor in diagnostic material remains extremely difficult. In this respect, the concepts of archaeogeography and archaeopedology provide keys to characterize and reconstruct the dynamics of these anthropogenic ecosystems over time.

I present here a case study in western Mexico where the evolution of a pre-Hispanic agroecosystem in a volcanic environment could be reconstructed in its broad outlines over a millennium (AD 500-1500) based on a LiDAR-based archaeogeographical analysis and fieldwork in landscape archaeology and archaeopedology. It was then set in perspective with the post-Conquest period on the basis of anthropological sources. The study highlights continuities in pre-Hispanic practices but also marked breaks in land use strategies, chiefly triggered by cultural processes. They are materialized by modifications in the field patterns at the scale of the sites as well as in choice of specific soils of the volcanic landscape over time. The study also provides keys to a better understanding of the major rupture constituted by the forced establishment European agricultural norms in the 16th century and puts into perspective certain areas that are today marginalized with respect to indigenous agricultural traditions.“

EXPLORING LAND-USE IN ARID REGIONS BASED ON STATISTICAL ANALYSES OF THE AGRICULTURAL PLOTS IN AL-ULA OASIS (HEJAZ, SAUDI ARABIA)

Abstract author(s): Charbonnier, Julien (Archaïos) - Gravier, Julie (UMR 8557 ,Center for social analytics and mathematics' and UMR 8504 ,Géographie-cités', EHESS) - Leschallier de Lisle, Anne (Archaïos) - Boudia, Sofian - Koszarek, Valentin (Université Paris 1 Panthéon-Sorbonne) - Kanhoush, Yasmin (Archaïos and UMR 5133 ,Arché-orient', Lyon)

Abstract format: Oral

The Al-Ula Cultural Oasis Project (UCOP), carried out by Archaïos, funded and steered by the French Agency for AIUla Development (AFALULA) on behalf of the Royal Commission for AIUla (RCU), aims at understanding the history of this well-known oasis located in the northern Hejaz region (Kingdom of Saudi Arabia).

To do so, a large-scale comprehensive survey of over 4000ha of gardens has been conducted between 2019 and 2022 in order to create the archaeological map of the oasis. Beside archaeological sites, earthen-made walls and buildings, and other vernacular structures, the survey also allowed to delineate the current plot of land. The latter is the product of a long history that probably began in the middle Islamic period, as suggested by the significant morphological differences between the plots. A study of the field pattern was therefore initiated in order to provide information on the spatial development of the oasis during the Islamic period.

This peculiar chrono-cultural context also offered the opportunity to test the methodological approaches applied to Europe in a very different context where water, and its sharing, seems to have had a structuring role. One of the difficulties encountered in this study was the lack of land registry and old maps and it was therefore necessary to rely on archive aerial and satellite imagery. Spatial/cartographic analyses were conducted on the orientation of plots, as well as multivariate statistical analyses on their morphology. These data were then cross-referenced with parameters related to their occupancy (e.g. density of infra-parcel buildings) in order to establish typologies.

The implementation of agrarian parcel studies in Arabia is unprecedented and we expect this study to provide new information on the history of the understudied oases, as well as to renew researches on field patterns.

THE FIRST DISCOVERY OF A PREHISTORIC FIELD SYSTEM IN SLOVAKIA - MULTIPROXY APPROACH TO ITS DATING AND THE USE-HISTORY

Abstract author(s): Hajnalova, Maria (Department of Archaeology, Constantine the Philosopher University in Nitra) - Benediková, Lucia (Institute of archaeology, Slovak Academy of Sciences) - Zachar, Jan - Furman, Martin (The Monuments Board of the Slovak Republic) - Lieskovský, Tibor (Department of Theoretical Geodesy, Slovak University of Technology) - Lisá, Lenka (Institute of Geology, Czech Academy of Sciences) - Bajer, Aleš (Department of Geology and Pedology, Mendel University in Brno) - Murín, Igor (Institute of Archaeology, Slovak Academy of Sciences) - Pető, Ákos (Institute for Wildlife Management and Nature Conservation, Hungarian University of Agriculture and Life Sciences)

Abstract format: Oral

In Slovakia, and east-central Europe in general, the relics of ancient field systems or other kinds of prehistoric land parcellation or boundaries are extremely rare. It is mostly due to medieval and modern era policies and laws that repeatedly changed the system of land inheritance and land ownership and led to complete transformation and/or disappearance of their remnants from the landscape. Their relics could survive only in hilly regions and on the plots that were not exploited since the early Middle Ages for farming, mining, or intensive logging.

We present the first discovery of prehistoric field system detected on the territory of Slovakia, recognised through observation of LIDAR images, and verified through test-trenches excavation and pedological sounding sampling of preserved relief relics. We bring the results of multiproxy analyses which aimed to ascertain the dating of this field system to prehistory or protohistory and to reconstruct its use-history. This is achieved through combination of the results of archaeological stratigraphy, soil chemistry, micromorphology, phytolith and plant macro-remains analyses, with radiocarbon dating of charred plant remains.

Geochemical analyses and radiocarbon dating are not yet finalised, but the first results show, that the field system dates as back as to the Iron Age and/or Late Roman/Migration Period and is most probably connected with oikumene that used a fortified hilltop settlement at the Zvon hill in Lazisko (dist. Liptovský Mikuláš, northern Slovakia).

Acknowledgements: This work was supported by the Slovak Research and Development Agency under the Contract no. APVV-20-0044 and VEGA 2/0035/22.

14 ANCIENT LANDSCAPES OF LOWLAND DEVON: NEW INSIGHTS ON ORIGINS AND TRANSMISSION

Abstract author(s): Turner, Sam - Ribas, Guillem (Newcastle University) - Kinnaird, Tim - Srivastava, Aayush (University of St Andrews) - Scutt, Win (English Heritage) - Watteaux, Magalli (Universite de Rennes 2)

Abstract format: Oral

Cultural landscapes are key elements in the common European heritage, but in many regions their development and the historic features that shape their character are not sufficiently understood. Landscape researchers have integrated archaeological and documentary sources with historical cartography (routinely using GIS), and used analytical tools like retrogressive analysis to unpick relationships between features. However, to fully understand how cultural landscapes were formed over the long term, including how elements from earlier landscapes contribute to today's landscapes, better ways to recognise their chronologies are needed.

In this paper we present results from a case-study completed as part of the PARCEDES project in Devon (UK). This part of south-west England has long been famous for its well-preserved upland prehistoric landscapes, but the development of the surrounding lowlands – and particularly the extent of any prehistoric legacy there – has been much harder to determine. Our project has used an innovative programme of field-profiling and sampling for chronometric analysis using OSL-PD (optically stimulated luminescence profiling and dating). The results are interpreted using GIS and spatial modelling to provide unprecedented insights into long-term landscape evolution from the Bronze Age onwards.

15 TO CHRONOLOGY AND BEYOND: USING LUMINESCENCE DATING METHODS FOR LAND USE RECONSTRUCTION OF CELTIC FIELDS IN THE NETHERLANDS

Abstract author(s): Choi, Jungyu - van Beek, Roy - Chamberlain, Elizabeth (Wageningen University) - Arnoldussen, Stijn (Groningen Institute of Archaeology) - Wallinga, Jakob (Wageningen University)

Abstract format: Oral

The eastern and southern parts of the Netherlands have an age-old agrarian history. The oldest agrarian parcellation systems that have left their mark on the present-day landscape are Celtic Fields. Despite sustained research efforts on this prehistoric field system, the chronology, land use, and formation process are still poorly understood.

This research aims to apply luminescence dating methods to investigate Celtic fields in the Netherlands, to gain insights into their chronology as well as their land-use history and formation processes. Luminescence dating has been introduced several decades ago, and now is one of the prominent methods that are applied in archaeology to establish the chronology of artefacts and archaeological sites. Recent advances in luminescence dating techniques allowed the dating method to go beyond the chronology, and attain further information within the deposited sediments at the site.

In this presentation, we introduce the novel application of single-grain post infrared-infrared (SG pIRIR) stimulated luminescence dating to interrogate agricultural soil formation and use history. We demonstrate how SG pIRIR can largely overcome problems caused by poorly bleached grains. Poor bleaching is a primary obstacle for applying luminescence dating to archaeological fields that were heavily influenced by intense human activities, such as ploughing and mulching. We also present a systematic approach to collecting luminescence dating samples on one of the Celtic field sites located in the eastern Netherlands, which can be further applied to archaeological research conducted in other parcelled field systems. Finally, we will share what information can be obtained when the new methods are applied to the Celtic fields, and how such data can be linked to the explanations of past landscape evolution.

A. SETTLEMENT PATTERNS IN THE EARLY MIDDLE AGES TO THE NORTH OF THE LOWER DANUBE

Abstract author(s): Ciuperca, Bogdan - Hila, Tudor - Dîscă, Cătalin - Anton, Alin (Prahova District Museum Of History And Archaeology)

Abstract format: Poster

To west of Târgșoru Vechi village, close to the left bank of Prahova River, in the so-called point Balastiera Holcim, was identified in 2019 a medieval settlement generally dated between the eight and tenth centuries A.D.

The investigations carried out between 2019-2022 by Prahova County Museum of History and Archaeology revealed a site extended over an area of several hectares, so far being excavated a number of 53 dwellings, 18 possible annexes, five freestanding fireplaces, three hoards of iron implements and weapons, six possible water wells, 16 burials, ten ceramic kilns, and tens of other archaeological features with various purposes. Due to the number and diversity of the archaeological features investigated this site can be interpreted as one of the largest and most important known so far in Wallachia.

The archaeological features of the above-mentioned site were identified on both banks of a dried stream, represented on maps from the beginning of the 20th century with the name “Bularu”. Based on the analysis of the ceramic materials and the radiocarbon dating, we assume that from a chronological point of view on this site developed at least two distinct settlements. In any case these settlements could have been occupied by the same community over different periods of time.

The development of similar patterns can be argued for the settlements from Bucov Tioca, Bucov Rotari, Dridu or for those from the Târșoru Vechi Archaeological Reservation area. In the last-mentioned case, a community seems to have occupied one or the other bank of Leaota stream in different periods of time.

Starting from these cases, we are trying to identify and discuss some patterns of land use by the populations of the early Middle Ages in the Romanian Plain (Dridu Phenomenon/ archaeological culture).

265 HOW IS ART SEEN? PERCEPTION AND THOUGHT IN PREHISTORIC ART [XSCAPE PROJECT]

Session theme: 3. Heritage Narratives and Representations

Session organisers: Santos-Estévez, Manuel (INCIPIT - CSIC) - Valdez-Tullett, Joana (Wessex Archaeology) - Díaz-Guardamino Uribe, Marta (Durham University) - Criado Boado, Felipe (INCIPIT - CSIC)

Session format: Regular session

How are landscapes, artefacts and ways of perceiving the world linked, and how do they interact? Every prehistoric art tradition has its own distribution, ornamental structures, designs and techniques, but to what extent are these features linked to thought systems, and how do they change over time?

Considering that material culture, and more specifically prehistoric art, such as rock art, sculpture, stelae and portable art, are closely related to the sociocultural systems within which it is produced, it is assumed that the various forms that it can take reflect the cultural thoughts of the artists or artisans. Likewise, we can invert this relationship and reflect on how art and material culture influence society's thought processes. What is the role of location patterns, visibility, decorative structures in the (re)production of ideology, social systems and ways of conceiving the world? What visual response and movement does prehistoric art produce?

In this session we will explore examples and illustrate how the entanglement between thought, society and prehistoric art can be explored. Studies developing, amongst others, approaches to emotion, sensoriality, embodiment, visual cognition and palaeopsychology, and reflections on the ontological and epistemological dimensions of these endeavours are welcome.

ABSTRACTS

1 NATURALISTIC, SCHEMATIC AND CONVENTIONAL STYLES IN THE PLEISTOCENE/HOLOCENE TRANSITION: NEW LATE MAGDALENIAN PORTABLE ART FROM AIZKOLTZO (BASQUE COUNTRY)

Abstract author(s): Ochoa, Blanca (Universidad Complutense de Madrid) - Ruiz-González, Daniel - Arevalo-Muñoz, Erik - Mujika-Alustiza, Jose (Universidad del País Vasco - UPV/EHU)

Abstract format: Oral

Aizkoltzo (Mendaro, Gipuzkoa) is a site with a late Pleistocene/early Holocene sequence with levels ranging from the Chalcolithic to the Late Magdalenian. In the Late Magdalenian layer six engraved portable art pieces were recovered: a multi-perforated batôn percé; a small broken pendant; a long whale bone fragment with a perforation; two fragments of a bird bone tube and a small rock. After their use, they were abandoned –or perhaps intentionally discarded– inside the cracks of the occupation floor dated to the Final Magdalenian; a moment when the site was heavily used due to the abundance of lithics, osseous industry and faunal remains found.

Some objects are simpler, with a single motif, while others combine multiple. The iconography of this ensemble is varied but also, peculiar, depicting both normative and non-normative figurative depictions with classical non-figurative motifs (multiple or parallel Xs or Vs, simple lines). Some of the figures are difficult to identify but are, conversely, very detailed, perhaps depicting European asses or rabbit; seals or fish combined with classical themes of this chronology: a doe, a horse, a frontal-view red deer and two antlers.

This combination of depictions with naturalistic details, schematic figures and conventional motifs is unique, allowing us to reflect on how varied the later Magdalenian portable art, combining the more naturalistic trends with the simpler trends typical of early Holocene art; indicating identity or ideological changes that accompany a changing world. This ensemble also corroborates the tight relation of the sites of the Cantabrian region with sites of the Bay of Biscay

and southern France, a pivotal position between two of the most relevant regions in the Pleistocene/Holocene transition. Thus, in this paper we will explore how these evolving styles in the transition reflect cultural thought processes, analysing the decorative structures that constitute the (re)production of ideology.

2 BEING AND SPACE: AN ONTOLOGICAL APPROACH TO THE STUDY OF PALAEOLITHIC ROCK ART IN THE DOURO BASIN

Abstract author(s): Santos, André (UNIRQ - Centro de Arqueologia da Universidade de Lisboa; Côa Parque – Fundação para a salvaguarda e valorização do Vale do Côa)

Abstract format: Oral

In the majority of the “ontological approaches” to the study of rock art only the images, and sometimes their media, are considered. Compositions are viewed, even if unconsciously, as isolated and self sufficient to approach the ontology of the societies that created and “lived” them. However, rock art has also a spatial dimension that enable us to approach how space was perceived and lived by these people. I argue that we have some clues in the ethnographic and rock art literature of the world that enables us to propose that depending on the mode of identification (sensu Descola, 2005) dominating a particular ontology, the landscape is differently approached. Consequently, I think that the study of the spatial dimensions of rock art is a crucial proxy to approach the ideas of “being” in past collectives. I will illustrate this with the case of the Palaeolithic rock art of the Douro Basin. In this region there is a huge concentration of rock art in the Côa Valley, but smaller sites are also known on other areas of the Douro basin. All these sites share not only the same morphology of imagery, but are also located within the territory where the sources of raw materials used in the lithic tools identified in excavations of the Côa Valley were found, thus demonstrating that the rock art was produced in the same world. Consequently, the differences that we may find in these sites can give us clues regarding that ontological world structure.

3 THE PRODUCTION, DISTRIBUTION AND CONSUMPTION OF ROCK ART. A COMPARATIVE STUDY OF HUNTER GATHERER SOCIETIES IN CHILE

Abstract author(s): Moya Cañoles, Francisca (Universitat de Barcelona)

Abstract format: Oral

Several authors link economies, ontologies, and epistemologies with the ways societies make and relate to art. Despite these assumptions, there are few comparative studies about prehistoric rock art and its relationship with lifestyles. In this paper, we present the results of a comparative study about hunter-gatherer rock paintings. Our study areas are North Central Chile (Coquimbo Region) and Central Western Patagonia (Aysén Region). We observe some similarities and relevant differences in the visual, technical and spatial attributes that we interpret as patterns of production, distribution, and consumption of rock art. Also, we recognize changes through time in each study area and distinct patterns of relationships with previous paintings. We link such differences with specific mobility ranges and strategies, uses of the landscapes and histories of peopling. Our study suggests the particularities of the rock art in each territory played important, but diverse roles in the reproduction of hunter-gatherer societies and the ways they inhabited their specific landscapes.

4 ROCK ART AS A REFLECTION OF ANDEAN SOCIETY AND THOUGHT IN THE LOCO RIVER BASIN, ANCASH, PERU

Abstract author(s): Perez Maestro, Carmen (Universidad de Alcalá)

Abstract format: Oral

The spatial and semiotic analysis of rock art associated with pre-Hispanic societies documented in the Loco river basin in present-day Peru has allowed us to glimpse how these visual resources reflect not only forms of thought but also distinct social practices within the same micro-territory. The repetition of minimal morphological units or graphic series, the eclectic spatial distribution of intra-site graphic patterns or the representation of certain canons are generally associated with distinctive Andean traits. However, the different ways identified of transforming the landscape, through spatial logics for the distribution of the graphics, the typology and visuality of the media and their capacity as a place of aggregation, different in each ecological floor of the valley, show two different modes of social organisation linked to human groups that moved and inhabited this space, coming from different ecosystems, the highlands and the coast. This is also inferred by the selection of different execution techniques, forms of representation, iconography and cultural patterns associated with this materiality.

5 ROCK ART - VISUAL REPRESENTATION, REUSE AND FOLDED TIME

Abstract author(s): Stebergløkken, Heidrun (NTNU Department of Historical and Classical studies)

Abstract format: Oral

Many of the rock art sites in Central Norway show characteristics of representing several different visits. Different types and styles, also panels representing both Northern tradition (Stone Age period) and Southern tradition (Bronze Age period), indicate returning to a specific place, revisiting, reuse of a place that were of great importance. However, does the usage or meaning behind the motifs change over this large timespan? This paper will try to explore these entanglements between the society, the rock art making (type/style and motif) and the prehistoric art using the case of the rock art site Mølnargården in Central Norway. This is a shelter with rock paintings that possibly dates from the Stone Age (approx. 6000 BCE) period to the Pre-Roman Iron Age (approx. 500 – the beginning of common era). However, dates from the cultural deposit layers continue until the Viking Age (approx. 800AD). This represents most probably a phase without rock art production, but the shelter itself was being used. Recent Viking Age research argues that re-engagement with the same site may, constitute itself as an occurrence – within which time folds. Time may have been perceived not as linear, but as folded where the line between past and present was blurred. I also think this can be applied at Mølnargården. What meaning does the past represent here? Maybe the site itself manifests a time depth that was important for the identities and self-perception of the social groups in this area. We are constantly surrounded with physical objects that are much older than our presence, this was also the case at Mølnargården from the Stone Age period until present time.

6 SYMBOLIC FEATURES AND ADAPTATION OF COMMUNICATION - THINKING THE CREATIVE PROCESS WITH MEGALITHIC ART

Abstract author(s): Silva, Denise (Faculdade de Letras da Universidade de Coimbra; FCT Scholarship 2020.04713. BD)

Abstract format: Oral

The tumular phenomenon stands at the forefront of several innovative conceptions in Prehistory, such as landscape manipulation and new behaviours towards death. Additional to that central debate, we can also discuss how information and knowledge were transmitted on the long run.

Besides the funerary structures themselves, the reproduction of symbolic features and visual characters (seen in the chambers and corridors) have the potential to be in the basis of variations in communication and early forms of record if we consider the shift in artistic manifestations from earlier periods to the megalithic era.

I will mainly consider the well-known and debated “The Thing” or “The object”, being one of the recurrent abstract motifs in some dolmens with corridor in the North of Portugal and Galicia and forward the concept of pattern recreation and recognition instead of symbolic creation, pondering on our understanding of human cognition and communication in Prehistory.

Following Material Engagement Theory as the main theoretical framework, I take two factors as a premise: the neocortex’s pattern recognition capability in developing and process patterns in nature, and the creative potential to translate them into easy and quick ways to make them transmissible and understandable to others.

7 HOW TO STAND BEFORE A ROCK. THE WAY OF SEEING THE ROCK ART DURING LATE PREHISTORY

Abstract author(s): Santos-Estévez, Manuel - Criado-Boado, Felipe (INCIPIT - CSIC, XSCAPE Project on “Material Minds” - ERC 2020 Synergy Grant 951631)

Abstract format: Oral

This work focuses on Atlantic rock art and also on Alpine and Scandinavian traditions. The changes that have taken place in main rock art regions across time in Late Prehistory can be observed not only in the iconography, but also in the way to observe the panels. The shape of the rock, the position of the panels, the arrangement of the figures or the perspective used have conditioned the way of seeing the art in each period. In Neolithic panels which are mainly horizontal, and decorated with geometrical designs, the observers can look at the panel from any point around the petroglyph. In Bronze and Iron Age rock art can adopt an almost vertical position, the scenes became more narrative with scenes of war and of hunting and the observers have to be in front of the carved surface and, at the same time, a virtual space is built creating the feeling of depth and movement.

Through Late Prehistory, we can identify important differences between periods, but in the transition between Neolithic and Bronze Age changes seems deeper. In Neolithic period, a group of observers could arrange around a petroglyph and none of them would have a privileged viewpoint. However, in Bronze and Iron Age the group of observers

should be placed in front of the panel, and therefore they would restrict their movement, there are fewer viewpoints to observe the panel, the rock cover part of the surrounding landscape imposing its observation.

8 EXAMINING INTERSPECIES RELATIONSHIPS AND NORDIC BRONZE AGE COSMOLOGIES THROUGH ART

Abstract author(s): Nic Aoidh, Nóra (UCD Dublin)

Abstract format: Oral

Despite roads and railways around the world being based on the widths of their bodies, non-human animals are now systematically excluded from much of modern western life. In some of the most human-populated areas, animals are forbidden from indoor spaces and from many private outdoor spaces. Yet humans are still heavily reliant on animals for survival, and beyond. Even the most frequently consumed products of modern human-animal relationships are cognitively detached from their origin: one rarely thinks of a thirsty calf when drinking cow's milk. However, this mental separation of animal product and animal source, and the carefully curated and restrictive interspecies relationships we participate in today, were almost certainly not present in the past. Examples of Bronze Age rock art and other artefacts convey a plethora of wildly different potential interpretations of how interspecies relationships were formed and performed, represented, and upheld in prehistory. Additionally, these media present us with questions of how art was conceived, created, and interacted with in the Bronze Age. The European Bronze Age is sometimes framed as a precursor to modern day capitalism, wherein animals were viewed as resources to be exploited. However, the wide range of real and imagined animal motifs on Nordic Bronze Age rock art panels, and their precise placement in rock and in the landscape, challenge these classically anthropocentric and capitalistic narratives of interspecies relationships. They also serve to contest standard naturalist categorisations as well as modern western ontologies. This project will demonstrate the value of posthumanist, experiential, and integrative landscape frameworks through case studies of rock art panels and artefacts with animal iconography from the Nordic Bronze Age. In doing so, it will contest rigid, naturalistic, and classically human-focused perspectives, and move towards a more holistic, post-humanist approach of understanding how different species (including humans) interacted in the past.

9 TO SEE THE UNSEEN AND UNSEE THE SEEN: PERCEIVING ADDITIVE AND SUBTRACTIVE ROCK ART IN NORTHERNMOST AUSTRALIA

Abstract author(s): Goldhahn, Joakim (The University of Western Australia)

Abstract format: Oral

'Art is solving problems that cannot be formulated before they have been solved. The shaping of the question is part of the answer'.

Following this thought-provoking grook of the Danish philosopher Piet Hein, this presentation will examine how different forms of rock art reveal themselves to an observer and how this intra-action later unfolds in various research outcomes. What kind of questions do we address towards different forms of artwork? Which questions remain to be raised? And, importantly, what forms of artworks do we see and acknowledge through our research as archaeologists, and what artworks remain unseen? Based on Karen Barad's agential realist perspectivism and recently conducted community-led fieldwork in northernmost Australia, this presentation will examine how additive (pictographs) and subtractive (petroglyphs) rock art have been perceived by European researchers. In trying to stay factual to Hein's grook, and by revisioning different forms of rock art and how these intra-acts with an onlooker, I hope to be able to formulate some new questions about how we see and perceive rock art globally. For example, how do we learn to 'see the unseen and unsee the seen'?

A. THE SECRETS OF THE FIRST TATTOOED

Abstract author(s): Fayer, Svetlana (Chercheur indépendant)

Abstract format: Poster

In 1900, six human bodies, naturally mummified, were exhumed by an English Egyptologist, near Gebelein (40 km., south of Thebes). They were buried in the fetal position, shallowly in the sand. Two of these bodies (male and female) are now in the British Museum. The date of their death has been estimated at 3351 and at 3017 BC. Recently, thanks to a new technology, scientists discovered on the man's arm, a tattoo of horned beasts, on the woman's upper shoulder four „S“ symbols and on her abdomen an „L“. [1] In our opinion, it could be a cultural code whose iconography reflects millennial beliefs where the feminine was associated with the snake and the masculine with the horned beast. According to the theory of Marija Gimbutas, these beliefs common to a very large territory (which we call a „common cultural horizon“) have persisted over a long period of time. She calls it „The Civilization of the Great Goddess“ [2] and believes it was run by matriarchy. We believe it is female monotheism. We have developed this idea in our new book

[3], in our latest article [4], as well as in our future presentation at the 90 ACFAS CONGRESS [5] and would also like to share it with you.

267 ANIMALS IN CRISIS: HOW CAN ARCHAEOLOGY CONTRIBUTE TOWARDS SOLVING CONTEMPORARY PROBLEMS IN ANIMAL WELFARE?

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Mannermaa, Kristiina (Department of Cultures, University of Helsinki) - Armstrong Oma, Kristin (University of Stavanger, Museum of Archaeology) - Brusgaard, Nathalie (University of Groningen, Groningen Institute of Archaeology) - Kirkinen, Tuija (Department of Cultures, University of Helsinki)

Session format: Regular session

Archaeology studies a wide array of human-animal relationships in past communities, such as hunting, trapping and fishing, animal husbandry, herding, and keeping companion animals – and everything in between. However, archaeological data and perspectives are underutilized in discussions on current ethical, moral, ecological and economic issues such as sustainable animal husbandry, biodiversity, rewilding, and pet breeding and trade. It could be argued that an essential element of the modern worldview is the assumption that animals are merely an amorphous mass rather than sentient, feeling individuals with their own agency. Animals are often “othered” to our human, conscious selves. Consequences of such views are, for example, keeping animals in small cages, hindering them from living out their species-specific behaviour or manufacturing and reproducing unhealthy breeds for human consumption or entertainment. Similarly, the current biodiversity crisis is sometimes linked to modern nature vs culture, us vs them dichotomies existent in many communities today. The local and global environmental consequences of these issues are plenty and dire. In this session, we call for papers that discuss how archaeological finds, case studies, and theoretical studies can participate in national and international debates concerning the moral, ethical, and practical aspects of today’s animal crises. Can we talk about animal welfare or exploitation in archaeological contexts? Can case studies from the past contribute to debates on rewilding, both practically and emotionally? Do we have finds demonstrating care and love towards domestic animals? And could archaeology become an agent for change towards best practices in contemporary human-animal relationships? We welcome discussion on these topics from a range of perspectives.

ABSTRACTS

1 THE ART OF LOOKING AT ANIMALS – MERGING PREHISTORIC AND CONTEMPORARY ART

Abstract author(s): Armstrong Oma, Kristin (University of Stavanger)

Abstract format: Oral

We cannot access the pair of eyes, the mind nor the hands that made, saw and touched prehistoric art. Oftentimes we don’t even identify objects as art, but as data, identity markers or mere objects of utility. In the process of preparing and installing the interdisciplinary art/archaeology exhibition *Eden and Everything After*, at the Museum of Archaeology, University of Stavanger, artistic practice, art history and archaeology combined to investigate renderings of animals in prehistoric, Modernist and contemporary art. Artist Tanja Thorjussen drew inspiration from engaging with prehistoric portable art and her reimaginings allows a glimpse of how people in the past knew animals from simultaneously keen observation and deep engagement. Making is seeing, and animals and their poignant presences appear as beings that can be experienced as imbued with spirituality and mysticism – qualities that inspired past and present artists. This paper explores prehistoric visions of animals as truly seen has the power to impact the present plight of animals.

2 ANIMALS AND AFTERIMAGES: THE ART OF REPRESENTING EXTINCTION AND AGENCY

Abstract author(s): Carey, Jean Marie (University of Stavanger Archaeology Museum)

Abstract format: Oral

As an art historian whose concern is the representation of animals across time, when I look at depictions of mammoths, rhinos, and aurochs in cave art, I see them in the environment where these images were conceived and developed, an environment that has remained pristine and unchanged. The cave acts as a frame that isolates and protects the animal figures it contains from the outside world of today. Yet these same animals who were delicately painted on rock surfaces disappeared from Europe millennia ago.

This type of immersive imaginative projection, a type of willed “slow looking,” can help us excavate the interiority of animal subjecthood of the past which in turn punctures our helplessness and apathy concerning the ongoing Sixth Mass Extinction. My project develops its methodological approach as an extrapolation from the writings of Hal Foster

on Nachträglichkeit, who himself builds upon the theories of Sigmund Freud and Jacques Lacan concerning “afterwardsness,” or deferred action.

Past and future tenses of continuity and rupture with the future of the will-have-been. This system of close looking and affirmative recovery can be used to assail – and to change – the socio-psychological barriers of how humans relate to animals. German aesthetic theory aids in such recovery because it further introduces Einfühlung – empathy – as a cognitive mode that proves capable of conveying such particularity.

Cognitive mediation of animals, using both empathy and imagination, assumes that animals are natural entities and vivid reminders of the self-activity of nature. This hypothesis is pursued through close readings of select texts and images from the late 1800s through the early 20th Century, during which the separation of archaeological and artistic modes of knowledge production was not yet decided and the idea of the sentience of animals was being controversially negotiated.

3 WHAT CAN WE LEARN ABOUT PAST HORSE HUSBANDRY PRACTICES?

Abstract author(s): Niskanen, Markku (University of Oulu)

Abstract format: Oral

Our domestic horse known as the DOM2 horse emerged on the Pontic-Caspian steppe during the third millennium BC, began dispersing at the end of that millennium, and had replaced all other horse lineages except those ancestral to the historic wild horses about a millennium later. Recent studies of ancient DNA of archaeological horses have revealed that past horse keepers managed to maintain genetic diversity but that starting about 2000 years ago breeding practices have reduced this diversity (especially that of Y-chromosome) and increased mutational loads. This process accelerated about 200 years ago when closed studbooks started to become common. As a result, genomic health of horses has suffered with obvious implications to their long-term viability and well-being compromising ability of especially “highly bred” breeds to survive in more “traditional” and natural conditions. We should partially return to earlier horse husbandry practices as well as protect and favor remaining landraces genetically adapted to their environment. We could also utilize information provided by genomic studies of past wild and domestic horses in breeding programs to enhance horses’ suitability for more traditional horse management practices and rewilding.

4 ANIMAL WELFARE IN LITHUANIA IN THE MIDDLE AGES AND THE EARLY MODERN PERIOD: EXPLOITED AND SOMETIMES PERHAPS LOVED

Abstract author(s): Piliciauskiene, Giedre - Vėlius, Gintautas - Minkevičius, Karolis - Vengalis, Rokas - Pilkauskas, Mindaugas (Vilnius University, Department of Archaeology)

Abstract format: Oral

One of the most informative sources on the welfare and use of animals are their skeletal remains and pathologies identified. Zooarchaeological material from the medieval castles and hillforts (Kernavė Aukuras Hill, Klaipėda castle, Vilnius Lower castle) and Early Modern period cities (Vilnius, Klaipėda) has revealed a wide range of pathologies and other evidence of how animals were used and the conditions under which they were kept. From a modern point of view, in many cases, animal life was hard and even cruel. However, there are also cases indicating that people treated and cared for sick animals. Although it is not clear whether this was done for practical reasons and the high value of the animals or simply for love of their pets. Moreover, written records from the 16th and 17th centuries AD indicate that nobles’ dogs were given a very high-level care, even by modern standards. In addition, animal pathology, historical data and the context of the sites show that cultural traditions and social environment played a role in the care and health of animals. In this paper we will try to discuss the welfare of domestic animals in Lithuania in the Middle Ages and the early modern period, based on zooarchaeological and historical data.

5 REWILDING THE PAST - THE PAST FOR REWILDING

Abstract author(s): Mannermaa, Kristiina (University of Helsinki) - Brusgaard, Nathalie (Groningen Institute of Archaeology)

Abstract format: Oral

Wild animals abound in the archaeological record, from deep prehistory up to modern times. Yet, after the transition of societies from hunting-gathering to agriculture and pastoralism, the broad social significance of wild animals is rarely recognised. They are used as a proxy for human subsistence and examined for their specific cultural purposes (e.g., elite hunting), but their societal relevance is studied often as secondary to that of domesticates. Conventional scholarly perceptions of wild fauna are interwoven with the role of these animals in western society today. We are currently facing a biodiversity crisis, the so-called sixth mass extinction event, with wild faunal and floral species dying off at an alarming rate. There is overall a recognised need for more ‘wild’ in the world and rewilding efforts provide hope for turning the tide. Yet the success of rewilding schemes is dependent on how socio-ecological dynamics are

addressed – i.e., how not just the ecosystem benefits, but also whether the social, the human-wild relationship, will prosper. Perceived threats by wild animals (such as damage to property) are a cause of serious setbacks in restoration programmes. This paper discusses how multi-disciplinary rewilding schemes can benefit from the robust baseline knowledge and crucial perspectives on the human-animal relationship that archaeology has to offer. It examines how we can learn more about the past and inform the future through paying more tribute to ‘the wild’ in the archaeological record.

6 POSSIBILITIES OF CONVIVIALITY: PAST-FORWARDING TO INSPIRE ALTERNATIVE FORMS OF MULTISPECIES CO-LIVING ON A DAMAGED PLANET

Abstract author(s): Hussain, Shumon (Aarhus University) - Stobiecka, Monika (University of Warsaw)

Abstract format: Oral

The increasing human alienation from nature – a result of Western lifeways and extractive ideologies – is often diagnosed as a root cause of many challenges characterizing the so-called ‘Anthropocene’. Relatedly, there is a growing consensus among environmental humanities scholars and critical theorists alike that foregrounding human solutions can only be part of the answer to these challenges, as the Anthropocene entails a fundamental disruption, and frequent eradication, of evolved forms of multispecies cohabitation. We here join nascent scholarship across the humanities to cash a notion of life that insists on the fundamental fact that life cannot be lived in isolation and that repairing the planet requires to recover, devise and cultivate alternative ways of living together with nonhuman others, including animals. We propose that archaeologists may respond to this urgent call by investigating and mapping past conditions and consequences of what Kate Rigby and others have called multispecies ‘conviviality’, provoking a critical redressing of how archaeologists commonly conceptualize and study human-animal interactions. In part, this also means that the past and deep past need to be re-imagined from the standpoint of a contested present in order to contribute to what may become possible in the future.

7 WHY ARCHAEOLOGY SHOULD CONTRIBUTE TO THE FIGHT FOR ANIMAL RIGHTS AND WELFARE: AN ACTIVIST’S PERSPECTIVE

Abstract author(s): Hakonen, Aki (University of Oulu)

Abstract format: Oral

Archaeology often bumps its head into issues of animal rights, whether past or present. In issues related to hunting, fishing, and animal husbandry, the scientific approach mandates a neutral stand. For this reason archaeology tends to see animals more as a human resource than any other. After all, without evidence of human use or consumption, animals are traditionally seen as outside the scope of archaeology. Despite the critical theoretical rhetoric, archaeology by default promotes human exceptionalism.

There is another kind of tradition to archaeology though, the kind that takes a stand for the powerless. For decades upon decades, archaeology has striven to decolonize itself. To rid itself of the presumptuous master-servant relations and to face up to the damage it has done in the name of science, especially to indigenous populations. Learning from past mistakes, archaeologists regularly speak out against racism, hatred, and injustice. Archaeological activism in this regard is implicitly encouraged.

What we know of non-human animal cognition, how they feel, how they fear, and the immeasurable quantity of misery humanity causes each day, forces archaeology to pick a side, again. To stay neutral in the face of expanding knowledge and worsening conditions for animals means siding with lazy social conservatism, which prefers to disregard new knowledge to justify the status quo. Archaeology is in a precarious position. It can be used to maintain the course, or it can have an actual real-life impact on making the world a better place. Staying neutral and languishing in irrelevance won’t do, for the stakes are high. Not for us though, as humans and archaeologists, but for the powerless defenseless others.

271 THE OTHER SIDE OF THE COIN: NEW INNOVATIONS IN NUMISMATICS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Ouellet, Jonathan (Leiden University) - Nol, Hagit (Goethe University Frankfurt)

Session format: Regular session

Coins are a common occurrence in archaeological excavations and a key tool in dating. Thus, they are an aspect of material culture that deserves further study. Coins should be understood in the context in which they were found. These studies can take a variety of forms including new and innovative techniques that utilize technology that was not available to archaeologists in the past. The papers in this session may be based on studies centered around any location or period which meets the following criteria:

- Coin finds from archaeological digs.
- Scientific studies based on techniques such as chemical analysis and network theory based on current and legacy data.
- Economic studies that are centered around coins as evidence.
- The use of coins outside of monetary functions such as jewellery or burial.
- Critiques of numismatic theory with an emphasis on how the field of numismatics fits into our modern global world.

This session aims to break the stereotype of catalogues and type lists and show new and innovative ways of studying numismatic collections. From new types of coins being dug out of trenches to scientific studies being done on silver and copper to determine mining and minting practices. Our session will also show the work of people from all parts of the world and bridge the gap between a field that is too often associated with archaeologists from the distant past, and show the diversity of the people working in the field.

ABSTRACTS

1 UTILITARIAN USE FOR PIERCED ROMAN COINS: PORTUGUESE EXAMPLES FROM EXCAVATIONS

Abstract author(s): Baeta, Alice - UNIARQ

Abstract format: Oral

Since the Republic and throughout the Empire, the Roman State made several monetary reforms and decreases in weight, size, and metal composition of the coin due to inflation. The copper coinage by the first century AD had a token value rather than intrinsic value. Therefore, coins of equal value would stop being interchangeable after these reforms and such created “out of circulation” coins. These coins that suddenly didn’t had official value could still be used for recoinage; melted, or just used for another purpose than monetary trading.

As the presentation will show, there are several pierced coins, originals and copies, from Portuguese archaeological excavations, found in contexts dating from the Republic to the early Empire, that were utilized for other functions than money. Eventually, these coins were selected because they would already be demonetized or were imitations of official coins. Being used as pendant-amulets, medals with a religious nature or in other more utilitarian functions, such as, simple studs. Such uses were not confined only to the Ancient World, lasting over time until the present day.

2 METALLURGICAL INVESTIGATION OF COPPER ALLOY COINS (5TH CENTURY BC - 3RD CENTURY AD): UNDERSTAND THEIR MANUFACTURING PROCESS

Abstract author(s): Bodet, Alexandre (Archéosciences Bordeaux; Bordeaux Montaigne University)

Abstract format: Oral

Compared to studies that already have tackled this topic but only for a specific coinage or period, our coins sample (135 coins from around the Mediterranean Sea and struck between 5th c. BC and 3rd c. A.D) allows to understand better the different coin manufacturing processes on a large geographical and chronological scale. Metallurgical investigations (metallographic observation, by optical and scanning electron microscopy) allows us to reconstruct the metallurgical history of these materials and to understand the savoir-faire used in their operational chain. The alloys used are determined by X-ray fluorescence spectrometry in addition to Vickers hardness tests, allowing us to understand the impact of minting. The study has already highlighted coins with a more complex metallurgical history than only casting and minting. This raises questions about the purpose and interest of this type of process for the craftsmen. Considering the geographical distribution of our samples, are there any similarities between their regions and years of issue? What about this distribution according to their categories and the different processes highlighted? Experimental archaeology sessions were carried out. The aim of these sessions was to investigate the relevance and implementation of some of the steps revealed by the analyses. Various treatments (mechanical, thermal) that may have been involved in the manufacturing process of ancient coins were investigated. Such as quenching, overstriking, or hot striking (still discussed today). In order to compare (in terms of microstructures and hardness) the results obtained from reproduced samples to archaeological ones. And, to assess whether these treatments have been implemented (or not).

3 THE PROJECT CLARENET: CLASSIFICATIONS AND REPRESENTATIONS FOR NETWORKS. LEVERING RESOURCES ON CELTIC NUMISMATICS WITH LINKED OPEN DATA

Abstract author(s): Wigg-Wolf, David - Brand, Mirko (Römisch-Germanische Kommission des Deutschen Archäologischen Instituts - RGK) - Deligio, Chrisowalandis (Goethe University Frankfurt) - Hofmann, Kerstin - Möller, Markus - von Nicolai, Caroline - Rösler, Katja - Tietz, Julia (Römisch-Germanische Kommission des Deutschen Archäologischen Instituts - RGK) - Tolle, Karsten (Goethe University Frankfurt)

Abstract format: Oral

The Semantic Web has opened up new possibilities for collecting, recording and analysing data, and within the Digital Humanities numismatics are very much one of the success stories of the Digital Turn. On the one hand, coins have long lent themselves to a wide range of computational and statistical analyses, and more recently have attracted a number of projects involving automatic image recognition and machine learning.

But the standardised nature of the core data for coins (the who, what, when and where), also makes them ideal material for approaches involving Linked Open Data. The international collaborative project Nomisma.org provides stable digital representations of numismatic concepts according to the principles of Linked Open Data. These concepts comprise a controlled vocabulary and an ontology (the grammar to accompany the vocabulary) that are now widely accepted within the numismatic community.

Their implementation facilitates communication and exchange not only between data resources with very different structures, but also of a very diverse nature, for example typologies, catalogues, collections and coin find repositories. A coin that is at the same an instance of a type, an object in a collection and a coin find, can thus at once be accessed and analysed in all these different contexts.

This contribution will draw on the experience of the numismatic project ClaReNet: Classifications and Representations for Networks (<https://clarenet.hypotheses.org>), financed by the German Ministry for Education and Research, in developing a virtual union catalogue Online Celtic Coinage(OCC) and discuss the challenges involved. We will explain how we have used the technology and mechanisms of Linked Open Data, as well as the flexible data management system Dédalo, to develop OCC and demonstrate how this approach does indeed “break the stereotypes of catalogues and type lists”.

4 THE USE OF COINS IN ROMAN RED SEA PORTS: FINDS FROM BERENIKE AND MYOS HORMOS REVISITED

Abstract author(s): Smagur, Emilia (Polish Centre of Mediterranean Archaeology, Univeristy of Warsaw)

Abstract format: Oral

Coins constitute a fascinating group of objects found at Indian Ocean port sites. Indigenous and foreign, they are being discovered in hoards and as stray finds, deposited in religious buildings, graves, and residential structures, or being casual losses. However, their common perception as indicators of fluctuations of trade and site prosperity resulted in relatively little interest in their roles beyond that of their economic value.

This paper aims to discuss the potential of coin finds as a tool for understanding the economic and social history of ancient Red Sea port communities inhabiting Myos Hormos and Berenike. More generally, its purpose is to create a narrative on creating and expressing the value through the study of the coin-use in the Western Indian Ocean ports. The issue of how people inhabiting and visiting Berenike and Myos Hormos understood and engaged with coins, as well as how their attitudes to these objects were linked to everyday life, human identities, and behaviors will be discussed as well.

5 A VERY OLD-FASHIONED INNOVATION IN THE STUDY OF COIN FINDS FROM BYZANTINE EGYPT: A CASE OF MAREA NUMISMATIC PROJECT

Abstract author(s): Jaworski, Piotr (Faculty of Archaeology, University of Warsaw)

Abstract format: Oral

The slightly provocative title of the paper is intended to draw attention to the existence in the numismatics of Byzantine Egypt of the phenomenon of selection of coin finds subjected to be studied and its negative consequences. The latter often consists in distorting the image of monetary mass in circulation. The economy of Egypt at the end of antiquity was strongly monetarized. As a result, the amount of coins obtained during excavations often exceeds the capabilities of even the most diligent numismatist trying to elaborate on them. A significant percentage of these coins are barely legible, badly corroded minimi, and their cast imitations or blank flans. Although they seem to be the key to understanding the monetary economy of Byzantine Egypt, minimi are often the material that is put aside for later study or marginalized in publications. The paper will present the assumptions of a new numismatic project conducted at the Faculty of Archaeology of the University of Warsaw, the aim of which is to comprehensively study all (literally)

monetary finds from Polish excavations carried out in Marea near Alexandria since 2000, the number of which exceeded 8,000.

273 DARK PREHISTORY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Mlekuž Vrhovnik, Dimitrij (University of Ljubljana; Institute for the protection of the cultural heritage of Slovenia) - Armstrong Oma, Kristin (University of Stavanger, Museum of Archaeology)

Session format: Regular session

The third science revolution in archaeology has brought a new hope that the past is ultimately knowable, an optimism that science can ultimately answer almost any question about the past. This has also brought a host of increasingly simplified views and explanations of the past, prehistory understood in modern Western categories and based on positive, scientific knowledge.

This is a bright, light, positive prehistory.

Our premise is that there is a dark side to the past. This darkness is not simply the absence of knowledge, but it figures as a constitutive element of prehistory. Prehistory is defined by its radical alterity.

This alterity also figures as a condition of reality we humans dwell in. What is unknowable, weird, alien, uncomfortable, painful and negative yet forms a constitutive element of being human? What is inaccessible, dark, and weird but integral to the prehistory itself? The radical alterity of prehistory should not be explained away by Western categories or dismissed as merely a colourful interpretation of reality. Instead, it should be a starting point for rethinking the past itself.

We want to focus on the negative, dark side of prehistory. We are interested in studies that treat prehistory as alien, weird, and inaccessible, defined by lack, negativity, death, absence and loss. We want to explore conceptual shadows, negativities, hidden and dark sides of prehistory.

We are interested in studies that focus on the harsh, hidden, uncomfortable, violent and grittier dimensions of social life; madness, violence, terror, and the subjective experience of these dimensions.

We welcome studies that deal with uncomfortable others, people, animals, and places.

Ultimately, opening to the dark side has revolutionary potential; it should throw us, archaeologists, our materials, and our sources into a state of vulnerability and risk. The dark prehistory opens the radical possibilities of the past.

ABSTRACTS

1 BODIES IN THE DARK: HUMAN REMAINS IN THE CAVES

Abstract author(s): Mlekuž Vrhovnik, Dimitrij (University of Ljubljana; Institute for the protection of the cultural heritage of Slovenia)

Abstract format: Oral

What are isolated human remains doing in the caves? Why would people go there to die possibly or to deposit a human body? When facing such a difficult conundrum, questions without obvious and straightforward answers, I turn to psychoanalysis, a theory that confronts humans with the most radical dimensions of existence.

Caves are ruptures in the fabric of the world, where its monstrous innards become exposed and tangible. This is a world we do not quite know, and for all we know, it might not even be ours. Here things are not just simple representations of pre-given social or political realities but operate on their own largely unknown principles. This radical unknowability of the world is always in relation to us, humans. We, as speaking beings, have a difficult time tolerating this lack of knowledge, this void, this gap. A cave, gap in a landscape, simultaneously marks a limit of discourse.

Crucial here is the Lacanian idea of a zone “between two deaths”, which brings the notion of a second or symbolic death. The cave offers the possibility not only of a biological death but, by getting lost and deposited in the monstrous innards of the world, of the radical annihilation of the symbolic texture through which social reality is constituted, an annihilation of the symbolic order, the symbolic pact which regulates social exchanges and sustains debts, honours, obligations.

But paradoxically, this second death opens a void in a symbolic texture, around which the symbolic network can re-articulate itself. This void makes symbolic activity possible; this void makes the (new) history possible. This second death has the potential for a radical renewal of symbolic order.

2 OH, TO BE HUMAN...

Abstract author(s): Pantmann, Pernille (Museum of North Zealand)

Abstract format: Oral

What is human value, what justifies human sacrifice, and what is the meaning of using human bones as raw material? Questions such as these are typical for archaeological studies of human remains in “special contexts”. The history of archaeology is full of examples of how prehistoric behavior towards humans and human remains has been explained and interpreted. Often the choice of vocabulary and terminology illustrates a preconceived idea or even judgement of the ancient societies’ dealings with human remains. Cutmarks on human bones is associated with cannibalism or excarnation. And human remains in bogs are sometimes described as human sacrifices with the implicit understanding that they represented the ultimate sacrifice. Thus, the sacrifice of a human being has traditionally been considered more valuable than the sacrifice of any other living creature or item. But the same elevated status does not seem to reflect on the loose human bones from contexts, such as household waste. Though they have been explained as disturbed graves they are rarely understood as the obvious: simple household waste. The question is if these examples of human behavior towards other humans and human remains reflect a dark side of human nature? A subsequent question would be: who are we to decide if a human behavior, lifestyle, or religion is dark or not? Is such an idea not another example of judging the past by our standards?

3 THE DEAD BODIES IN PIECES: HUMAN REMAINS FROM BRONZE AGE SETTLEMENTS IN THE CARPATHIAN BASIN

Abstract author(s): Szeverenyi, Vajk (Deri Muzeum)

Abstract format: Oral

The mortuary behaviour of prehistoric communities, their relationship to death and dead bodies is often characterized by what we might call radical alterity. While dead bodies neatly lain down in cemeteries separated from the realm of the living are a dominant and familiar phenomenon, there are also numerous exceptions. Human remains from prehistoric settlements in the Carpathian Basin are rare finds mostly referred to in the literature as “irregular burials”, and thought of as victims of unique events such as epidemic or warfare. During the past few years, such remains from Early and Middle Bronze Age (ca. 2600-1500 BC) settlements were collected in a database and analysed as part of a postdoctoral research project. These remains entered the archaeological record in various forms, in various phases of the decomposition of the dead bodies, and obviously thanks to various cultural practices. Murder, mutilation, mass graves, miscarriage, warfare, epidemic, and surprising and sometimes – to us at least – morbid practices can be identified through the study of these human remains. But are they “dark” and “negative”? While they might be alien for us, they seem to have been an integral part of Bronze Age life and death. What kind of social and ritual practices can be reconstructed through the analysis of these remains? What might be their relationship to “normative” burial rites? Who or whose remains were selected for burial or deposition within settlements? The aim of paper is to try to answer some of these questions.

4 THE CONCEITS OF DOMESTICATION: VIOLENCE, KILLING, AND THE UNDERPINNINGS OF HUMAN-ANIMAL COMMUNICATION

Abstract author(s): Kanne, Katherine (University College Dublin; University of Exeter)

Abstract format: Oral

These are bright times for human-animal research in archaeology. From the archaeogenetic revolution to relational, multispecies, and posthumanist approaches, the depth, complexity, and multifaceted prehistories of our entanglements with animals are being revealed with ever greater resolution and care. The domination model of domestication is untenable. Animal agencies are increasingly recognized in the mutuality of domestication processes and human-animal coexistences.

However, this paper asks the dark question, what if the threat of violence and death ultimately underpins how we communicate with domesticates? Exploring power imbalances between humans and animals, it examines our ways of communicating with, living with, and making a living off of our animals where we meet: namely by deferring threats of violence and death in trade for the promise of food and relief, so long as we receive benefits. Focusing on the language of human-domesticate communication, ‘enainment’, ‘enskilment’, and ‘intra-actions’, are predicated on a series of repeatable and repetitive gestures that seemingly invoke threats of violence, no matter how minor or removed from real violence, resulting in kindness tempered by the spectre of viciousness. How have animals co-created, worked within, reacted to, and directed this communicative nexus? How are people drawn into communicating in ways to avoid the threat of harm from the animals with which they work?

The aim to not diminish the ways in which recent scholarship highlights the deep history of multispecies symbiosis and mutual becomings, or the ways in which people and animals largely worked together without violence in daily activities.

On the contrary, it interrogates how our languages of communication are part of our negotiated co-evolutionary prehistories, drawing from ethology and zoosemiotics, considered through process theory, posthumanist thought, and the archaeology of inequality. Exposing the conceits of violence and death inherent in domestication processes can radically open our interpretations of more-than-human pasts.

5 DARK SOULS. THE IDEA OF VIOLENCE IN THE SCOPE OF WESTERN EUROPEAN MEGALITHISM: CONCEPTS, DISCOURSES AND MATERIALITIES

Abstract author(s): Agosto, Frederico (UNIQ – Center of Archaeology of the University of Lisbon; CFUL – Center of Philosophy of the University of Lisbon; FCT – Foundation for Science and Technology) - Carvalho, Daniel (UNIQ – Center of Archaeology of the University of Lisbon; LAQU – Quantitative Archaeology Lab of Universitat Autònoma de Barcelona; FCT – Foundation for Science and Technology)

Abstract format: Oral

Being a concept that possesses a long genealogy, the idea of violence has dotted the prehistoric discourses in Europe, where megalithism – hereby understood as all forms of the megalithic phenomenon – has become a prime stage for this discussion.

Initially, the idea of violence in prehistory was commonly framed between that of a noble savage or a violent barbarian, but, lately, violence has started to encompass a wider range of realities and materialities, bolstering its conceptual robustness. Moreover, the archaeological record has long given us a multitude of evidence for violent conflicts in Europe, such as the neolithic sites of Achenheim and Bergheim in Alsace-Lorraine (France), or even contexts of cannibalism and sacrifice in the neolithic site of Cournanel (Aude, France).

The megalithic phenomenon in the Iberian Peninsula also serves as an empirical basis for the discussion of such topics (e.g., San Juan Ante Portam Latinam, Álava, Spain), where multiple examples of violent encounters and social instability are visible, temporarily framed between the 4th and 3rd Millennium BCE.

In our paper we proposed to discuss the definition and concept of violence and presenting the materialities and contexts associated with violence within the megalithic phenomenon, while framing it within the overall discourse on violence in the study of megalithism in Western Europe.

6 PANOPTICONS OF CONTROL? CONSIDERING STONE CIRCLES AS PARANOID ARCHITECTURES

Abstract author(s): Lambert, Rebecca (Birkbeck, University of London; University of Glasgow)

Abstract format: Oral

British Neolithic architectural monumentality has often been considered through a lens of communal construction equating to social cohesion. It has been suggested that the Neolithic, especially the later phase, was a halcyon existence for its inhabitants, both locally and on a broader scale. But what if this was not the case?

Focusing on stone circles, this paper will explore the possibility that the construction of Later Prehistoric monuments may have been a means to, potentially, control others, both physically and psychologically.

Is it possible to identify hierarchical power through the analysis of stone circles? Can we ascertain whether social control was apparent through the choice of location and organisation of labour? Were there consequences for failing to complete constructions, or for refusing to take part in these communal projects? Or did authority only arise once the monument was completed?

Were stone circles panopticons of control; structures that channeled malignancy, intimidation and fear, rather than altruism and spiritual care? Together, we will contemplate these enigmatic monuments and consider whether they can be deemed Paranoid Architecture and thus, an essential element of a Dark Prehistory.

7 THE TALE OF THE TWO VINČA CITIES

Abstract author(s): Kocic, Miroslav (Center for Archaeology University of Kragujevac)

Abstract format: Oral

The primary paradigm of the Neolithic in Balkan archaeology was one of the peaceful farming communities. This was especially the case with the Vinča culture of the Central Balkans, where the narrative went that those populations lived in small hamlets, with Vinča Belo Brdo being the eponymous and the most important site of the culture. Hallmark postcard that this narrative made was so entrenched that even a suggestion of a defensive ditch that was excavated on Vinča Belo Brdo was dismissed as a methodological error. Within the last two decades much has changed with few methodological as well as paradigm shifts. Now, thanks to geophysical prospection, we know that there is not a single Vinča site that was surveyed that does not have extensive fortifications. These fortifications were excavated on number of sites showing very elaborate systems of both practical and symbolical fortifications and delineations.

Striking and abruptly dark characteristics come into the limelight when settlement features and regional patterns are looked upon.

Dismembered human remains found in the defensive ditches became more of a rule than an exception. Regional settlement patterns in systematic pedestrian surveys show strong centralization that no “light past” pattern can fully explain. This paper will analyze and contrast these two tales of Vinča, using the results from recent research on sites of Oreškovića, Grivac, Kusovac and Klenak Adžine Njive and the darker aspects of the culture that are emerging.

8 WHAT LURKED IN THE DARKNESS IN THE NORDIC BRONZE AGE WORLD?

Abstract author(s): Melheim, Lene (Museum of Cultural History University of Oslo) - Armstrong-Oma, Kristin (University of Stavanger, Museum of Archaeology)

Abstract format: Oral

Since the advent of archaeology, the Bronze Age discourse has centered around the sun and its life-giving warmth, resulting in a reconstruction of a sun cult and mythology (e.g. the schematic journey of the sun through day and night, by Flemming Kaul (1998) in “Ships on Bronzes”). Bronze Age iconography is pervaded with sun symbols in the form of circular shapes and iconography with spirals, concentric circles and solar rays. And still, such objects are often found deposited in dark and murky waters. Strange objects such as the Nebra disc with its night sky and the Trundholm horse with its sun and moon disc also appear, but their reference to the dark side - the time between sunset and dawn when Kaul’s night ship traverses the realm of the sea, but also night, darkness and death - is almost without exception overlooked. On the Scandinavian Peninsula, mountains, rock shelters and screes seem to have played a similar role as waterbodies, as openings to other worlds. The psychological aspect of these locations have, however largely been ignored.

In this paper we will start a journey into the darker, unexplored sides of the Nordic Bronze Age world, and compile and assess some sources that will allow us a glimpse of perceptions, myths and practices associated with aspects of life that were physically and mentally in the dark.

277 IT'S A MATTER OF SPACE: THE MATERIALITY OF SPACES OF NEGOTIATION AND SOCIAL COMPETITION FROM PREHISTORY TO MEDIEVAL TIMES

Session theme: 6. Contested Pasts & Presents

Session organisers: Orfanou, Vana (Ludwig-Maximilians-Universität) - Zapelloni Pavia, Arianna (Institute of Classical Archaeology, Charles University Prague) - Scarci, Azzurra (Römisch-Germanisches Zentralmuseum, Mainz)

Session format: Regular session

Social competition was a key aspect of community interactions in the past. This session adopts a material culture and materiality perspective to the diachronic investigation of social negotiation, including notions of ‘otherness’, in antiquity as understood through their tangible expressions. We consider spaces of negotiation as cultural settings of antagonism, where groups and individuals engaged in identity formation and consolidation through mechanisms of social competition, often through confrontation with the ‘other’, purposefully or unintentionally.

In this session, we investigate how material remains from spaces of social negotiation and mediation can shed light on the dynamics of community competition. The spaces under scrutiny include—but are not limited to: 1) cult and ritual spaces, which attracted visitors from all walks of life, and burial grounds, which often represented the backdrop for the expression and creation of group and individual identities; 2) crossroads, which facilitated the – often circumstantial - give-and-take of materials (trade, exchange) along with ideas (cultural negotiation); 3) borders as meeting places, which formed the settings for long term negotiation of cultural and collective identities, as well as socio-economic and political influence; and 4) domestic and craft localities, which can act as platforms for cultural negotiation on a smaller scale such as with migrants and itinerant craftspeople.

This session aims to tackle questions on the modes and impacts of cultural interactions as viewed broadly through the lenses of their material remains. We welcome papers that investigate material culture, including scientific / analytical approaches, over a long time span from prehistory to the medieval times. Papers will explore the mechanics of cultural negotiation diachronically through social synergies and competition, influence, and the management of competing identities (political, social, individual, collective) in a variety of social contexts

1 SANCTUARIES AS SPACES OF IDENTITY NEGOTIATION: THREE CASE STUDIES FROM THE GREEK AND ROMAN WORLD

Abstract author(s): Orfanou, Vana (Ludwig-Maximilians-Universität) - Zapelloni Pavia, Arianna (Institute of Classical Archaeology, Charles University Prague) - Scarci, Azzurra (Leibniz-Zentrum für Archäologie)

Abstract format: Oral

Sanctuaries in the Greek and Roman world were the par excellence sites for the performance of religious rituals and social interactions. They provided marked spaces as platforms for expression of collective and individual identities. Here, we explore identity negotiation in three sanctuaries in Italy and Greece during the 1st mil. BC as seen through the lens of metal votive offerings. Firstly, inscriptions from the sanctuary at Bagni di San Casciano, near Siena, reveal the dynamics of interaction and competition between the Etruscans and the Romans in the last centuries of the Roman Republic, when power was slowly transitioning to the Romans. Inscriptions on artefacts featuring both Etruscan and Latin names suggest that the sanctuary attracted devotees from both cultural groups, which aimed to assert local identities at a time of dramatic political change. Secondly, the reconsideration of an assemblage of >300 offensive iron Greek and indigenous weapons from a tiny sanctuary at the Greek subcolony Kasmenai, in south-eastern Sicily, offers an alternative view of the other. The indigenous weapons, originally considered to represent the booty taken from the locals by the Greeks, thus assuming hostile interactions, are now seen to represent the other as allies and cohabitants interacting in a typically Greek sanctuary space. Lastly, at the early Greek sanctuary of Thavlios Zeus, near Volos, at an important crossroad in central Greece, devotees from different cultural groups were visiting with their respective votive offerings. The study of hundreds of metal fibulae showed that types with geographical links in Thessaly and further north in Epirus also featured a distinct technology including the use of local raw materials. All three case studies highlight the role of the sanctuaries as social negotiation spaces where votive offerings aimed not only to appease the gods but also to assert the identity of the devotees.

2 WAS DELPHI THE CENTER OF THE WORLD ? THE MYTH OF THE OMPHALOS AND THE ROAD-NETWORK OF ANCIENT DELPHI

Abstract author(s): Vorsanger, Adèle (Université de Caen Normandie)

Abstract format: Oral

The oracular sanctuary of Delphi, in Central Greece, attracted thousands of worshippers from the entire Greek world throughout Antiquity : private pilgrims, sacred embassies, athletes, merchants... According to a well-known myth, Delphi was believed to represent the centre of the world, where two eagles sent by Zeus from the opposite ends of the universe would meet. Strabo has rationalised this legend by reckoning the sanctuary to sit in the middle of the Greek world, being thus easily reachable from any part of Hellas. This point of view is commonly accepted in modern historiography and the prestige of the oracle is often linked with its situation at a crossroad between long-reaching regional axis. But this apparent determinism must be challenged, especially by investigating the materiality of the road-network around Delphi. Is the site of the oracle really served by significant regional roads ? Was Delphi an important sanctuary because of this alledged road-network, or should we also consider the opposite hypothesis, that roads and circulations centered around Delphi due to its religious significance ? This communication aims to reconsider the dynamics of circulations to and from ancient Delphi, by acknowledging the major contribution of recent works about ancient greek roads. Through a case study combining archaeological, epigraphic and literary sources, this communication will shed light on an essential phenomenon of mobility in the Greek world, where religious and geopolitical issues are intertwined.

3 DYMAIA CHORA DECODED: THE SOCIAL DYNAMICS OF REGION OF WESTERN ACHAEA AT NW PELOPONNESE THROUGH FUNERARY PRACTICES

Abstract author(s): Argyropoulos, Vassilios (Ephorate of Antiquity of Achaea)

Abstract format: Oral

The area of study, is located at NW Peloponnese, western Achaea (Dymaia Chora) and, centered on the city of Dyme, one of the major cities that founded the 2nd Achaean League. The latest archaeological excavations and, especially the revelation of cemeteries, have given us the evidence, for further interpretations regarding the political, social and cultural changes and transformations in the countryside of western Achaea through the study of the dialectic of the inhabitants' dead. The period of interest extends from the mid-5th century B.C., to the end of the 4th century B.C. coinciding with the founding of the city-state.

The study of the burial practices and rituals, give us not only the possibility to reveal the changing social hierarchies, the social competitions, the political, social/ individual identities of the inhabitants of the region, but also a great understanding of the transformations and reconfigurations of the local society. The luxury of the tombs and the adoption of the custom of cremation at Dymaia is also a strong indication of the social changes that took place during this period. The choice of funerary practices is a manifestation of social differentiation, in the same way that the elite under consideration or the leadership groups of Dymaia Chora were trying, not only to legitimize their position, but also to create a hierarchy. Considering that the dynamics of social/individual competition contributed to the historical development reshaping the common and social organization of the area, we aim to present through new excavation data an interpretation of the social identity of the inhabitants of Dymaia, established through the mechanisms of social competition in the post-classical period.

4 GLOBAL VS LOCAL? CENTRAL APULIAN ELITE IDENTITY IN THE LATE 4TH CENTURY BCE

Abstract author(s): Peruzzi, Bice (Rutgers State University of New Jersey)

Abstract format: Oral

The study of Central Apulian graves from the Classical and Hellenistic periods show that the funeral was the pivotal moment in the funerary practices of this region. Evidence from burials illustrates how funerals were used as arenas to create relationships among social groups (with the exclusion of others); assert and negotiate status through the provision of both wine and food; and legitimize power through the consumption of artifacts that highlighted ties within and outside the community.

This is clearly illustrated by the profound shift in elite burial practices in the second half of the 4th century BCE. Suddenly, high expenditure tombs adopted assemblages with monumental vases, decorated with sophisticated iconographies that referenced Greek tragedies; furthermore, locally produced matt-painted wares, one of the cultural markers of Central Apulian populations since the 8th century BCE, virtually disappeared.

I argue that these changes were driven by a mix of internal and external causes. In the second half of the 4th century, Apulia had become the backdrop of many important historical events –from the arrival of Alexander the Molossian and the other “condottieri,” to the war between the Tarantines and the Messapians, to the beginning of the Roman conquest. Thus, using late 4th century graves from Ruvo, Altamura, and Timmari as case studies, it is possible to explore evidence for the complex strategies adopted by the local elites (e.g., bilingualism, invented genealogies, trade) to navigate this new broader world, and present themselves in a way that could be understood not just by their communities but also by a larger, “international” audience.

5 ELITE NEGOTIATION IN A PRE-URBAN WORLD: CENTRAL ANATOLIA BETWEEN THE HELLENISTIC AND THE ROMAN PERIODS

Abstract author(s): Maranzana, Paolo (Bosphoros University)

Abstract format: Oral

This study examines the impact of elite negotiation on settlement development in northern central Anatolia during the Hellenistic and Early Roman periods (ca. 2nd c. BC to 2nd AD). The research demonstrates that before the Roman conquest, the region was inhabited by different populations, including Phrygians and Galatians, and their settlements were primarily located on fortified hilltops, which were controlled by local chiefs. Most of the sites discovered so far are relatively small, although monumentality seems to increase in the later Hellenistic Period, mostly due to contacts as well as direct investments on the part of foreign powers, such as Pergamon. After the Roman conquest, city building was initiated, but it was only established in areas of direct imperial interest and through the collaboration of local urban elites, as evident in the cases of Ankara and Pessinus. Urbanism was, however, not widespread in Roman central Anatolia. This paper will also compare the role of local elites in areas where cities were established, such as the upper Sakarya river valley (greater Ankara region), and in regions where extensive urbanism was lacking, such as southern Pontus (Tokat).

6 THE MATERIAL CULTURE OF DIPLOMATIC GIFTS AS A STATUS SYMBOL - EXAMPLE OF LATE MEDIEVAL DUBROVNIK

Abstract author(s): Zovko Šoštarić, Valentina (University of Zadar, Department of history)

Abstract format: Oral

This presentation focuses on the detection of gifts that Ragusan ambassadors presented to their hosts at various places: European courts, private houses, public squares, summer residences, and the Sublime Porte (mid-14th-early 15th c.). Those places, private and public were used as sites of diplomatic rituals that were an important and effective tool in reaching desired benefits in a formal or more intimate manner.

The material culture of diplomatic gifts is seen as a determinant of power and a visible sign of the status symbol of the receiver. City authorities have shown expertise in the selection of gifts, their procurement, circulation, and production while respecting the personal preferences of the recipient, the dominant style, and economic and aesthetic values sublimed at the taste of the epoch shared across cultural boundaries. At the same time, gifts carried carefully wrapped messages regarding the community identity features promoting local craftsmanship, luxury goods, and materials in complex cross-cultural settings. Of special interest is to compare specific presents gifted to various people presented at the same courts and to notice how those gifts directed to the same individuals diachronically altered.

Sources kept in the Dubrovnik State Archive allow us to reconstruct the list of Dubrovnik's diplomatic gifts presented to various recipients of different political hierarchies, gender, age, profession, and religion. Interpretation of the reasoning underlying the selection of gifts offers an interdisciplinary approach to analyzing their pragmatic purposes, origin and production, value (economic, social, cultural, practical, emotional), and manipulation of their usage over a longue durée. As well as influencing contemporary and future political relations, the gifts encouraged symbolic, material, and cultural exchanges between similar as well as diverse civilizations, cultures, and religions.

7 SPACE, MARGINALITY AND ECOLOGICAL SHIFTS IN MID-REPUBLICAN ITALY: THE CASE OF CANUSIUM-DAUNIA, 325-200 BCE

Abstract author(s): Scopacasa, Rafael (Universidade de São Paulo/ University of Exeter) - Perego, Elisa (University College London)

Abstract format: Oral

The early Roman expansion in Italy saw the reshuffling of power relations across the peninsula. Recent studies suggest that these sociopolitical changes took place in an overall context of climatic shifts connected with the onset of the "Roman Warm Period" (RWP), which may have altered the profile of Italian natural environments. This paper brings together written, material and environmental data pertaining to the ancient town of Canusium in the Ofanto valley in southern Italy (Daunia); it explores how an integrated approach to historical, archaeological and environmental trends at the microscale can afford a finer-grained picture of how broad geopolitical shifts were linked with changing dynamics of subordination and marginalization at the local level. The Ofanto valley houses different socioenvironmental niches closely juxtaposed in space: the main urban centre, the well-watered river valley, and highly drought-sensitive plateaus (Tavoliere and Murge), whose agricultural potential depends on a fine margin of climatic stability. Survey evidence points to changing occupation of these spaces c.350-200 BCE: there was an accelerated infill of the countryside around the city, as elsewhere in mid-republican Italy; yet, our data indicate that the infill at Canusium targeted not the river valley but the drought-sensitive plateaus, which might have become increasingly challenging owing to the onset of the RWP; while the urban centre displays growing signs of elite self-affirmation (e.g. monumental chamber tombs). By analyzing these trends in relation to their spatial and environmental context, we envisage different possible directions in which the renegotiation of power dynamics between urban elites and agricultural workers may have moved under the rising Roman imperialism.

8 SOCIAL NEGOTIATION IS MULTICONTEXTURAL

Abstract author(s): Small, David (Lehigh University)

Abstract format: Oral

As archaeologists we too often concentrate on a particular social context to analyze social competition and negotiation, drawing larger community wide conclusions from observations limited to a single context. This approach has been partially productive, but I argue that this concentration also misses the much larger picture of social negotiation within communities. Individuals and groups employ a range of community contexts for negotiation, often moving from one context to another in their strategies of social positioning. I will describe how groups used various contexts for community positions, focusing on cases from ancient Greece, looking at social negotiation in domestic, civic, religious, and funerary contexts. My analysis is based on understanding the dynamics of the material contexts of each social context and how these arenas of negotiation are linked in larger strategies of social competition. The situation for ancient Greece will be compared to social status negotiation in other cultural communities such as the ancient Maya, Rome, and more modern cultures.

9 NEGOTIATING IDENTITIES THROUGH PREHISTORIC COPPER MINING: EVIDENCE FROM THE GREAT ORME MINE, NORTH WALES, UK

Abstract author(s): Wager, Emma (Independent Researcher)

Abstract format: Oral

The ore sources accessible in prehistory were bounded geological entities, forming delineated spaces where people from different communities and/or locations may have come together to work alongside one another. The ore ex-

tracted was the starting point for the Bronze Age ‘metal supply’. As such, we can envisage that prehistoric mines were settings for social competition centred on the procurement of copper ore for smelting.

This paper investigates how collective participation in mining at these localities could be a vehicle for the negotiation and reworking of individual and community identities, in ways that may have persisted beyond the physical confines of the ore source and the moment of mining.

This idea is explored using the material evidence for copper ore mining in the second millennium BC at one of Europe’s larger and most accessible prehistoric mines, on the Great Orme, north Wales, UK. A specifically technological perspective is proposed, in which all technical activities are understood to be intrinsically social and political. Also emphasised is the important role the broader social context plays in understanding the configuration of local processes of social competition during the Bronze Age.

10 “WHAT WE DO IS WHO WE ARE” CRAFTSMANSHIP AND IDENTITY ISSUES IN A BORDER ZONE

Abstract author(s): Paralovo, Elena (Charles University, Prague)

Abstract format: Oral

Ceramic pyro-technology addresses not only technological issues concerning pottery production but also a broad range of social behaviours and cultural aspects. In this regard, the current research focuses on a specific class of objects, the kiln spacers, which emerged from two rescue excavations at the site of Mantova. Mantova is known to be an Etruscan centre founded in the 5th BCE during the so-called “colonization phase” of the Po Plain (6th-5th centuries BCE), a fertile crossroads area where different cultures were active. Even though the interest in this territory is spread among scholars, a deep study of the production activities is still missing.

The objects of this presentation are 14 ring-shaped spacers for kilns, simple supports that allow the separation of the pots into the cooking chamber to optimize the circulation of the heat. A detailed analysis of the mineralogical characterization of the spacers has been achieved by the application of X-ray powder diffraction (XRPD) combined with scanning electron microscopy (SEM), alongside an accurate investigation of the ceramic petrography. By adding archaeometric results to a solid study of the firing techniques and devices (kilns) characterizing the Iron Age production in northern Italy, it will be possible to achieve an extensive understanding of the thermal profile of the spacers and even a deeper knowledge concerning the technological choices.

It frequently happens that the people living in a border zone tend to be seen with fascination. Due to their geographic position, they share characteristics of different cultures, adopting some features and rejecting others according to what they perceive as proper and representative. It is then intriguing trying to grasp these people by looking not only at the material culture but also and especially at the technological choices that lay behind the production activities, by pursuing a label-free perspective on these liminal communities.

A. BURIED BY TIME. OS CASTRULLOS AND THE PROBLEM OF THE ‘HENGIFORMS’ SITES IN GALICIA (SPAIN)

Abstract author(s): Prieto-Martínez, M. Pilar (EcoPast, USC; CISPAC) - Nieto-Muñiz, Eduardo-Breogán (Breogán Arqueología) - Cordeiro-Maañón, Luis (EcoPast, USC) - Castro-González, M. Guadalupe (EcoPast, USC; CISPAC)

Abstract format: Poster

The so-called circular enclosures or ‘hengiforms’ sites in Galicia are a new type of site identified for the first time in 2006 that is still not totally defined. These enclosures are circular-shaped sites defined by an exterior perimeter ditch and parapet and by the scarce material culture found inside their structures. Today they are hidden sites in the landscape, but they were probably very visible when they were in use.

Six of these sites have been partially excavated and only four have radiocarbon dates ranging from the middle of the second millennium BC to the end of the first millennium BC. We still do not know the specific use of these sites, but their architectural features and their material culture suggest that they may have had a ceremonial function related to community or intercommunity social relations and linked to funerary rites. Os Castrullos site, located in Forcas (Parada de Sil, Ourense, NW of Spain), is the most recently excavated hengiform site in Galicia. Our objective is to show the preliminary results of the small excavation carried out at this site, such as its construction, the material culture identified or its C14 dating, to later analyze it in a broader regional context.

COMMODITY, CONTAINER, CONSUMPTION - EUROPEAN STONWARE BETWEEN REGIONAL AND GLOBAL TRADE SYSTEMS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Keller, Christoph (LVR - Amt für Bodendenkmalpflege im Rheinland) - Hall, Derek (Independent Researcher) - Röser, Christian (LVR - LandesMuseum Bonn) - Witte, Frauke (Museum Sønderjylland)

Session format: Regular session

During the 13th century a significant change in ceramic technology took place, when potters in different European regions began to produce stoneware. Since then vessels for drinking, serving and storing were made not only for local consumers, but were also distributed to distant markets. Products from potteries like Martincamp (FR), Siegburg (D) or Nottingham (GB) can be found frequently in archaeological sites not only in Europe but also in former overseas colonies, which raises numerous questions concerning trade, demand and use of stoneware vessels.

The session will investigate the development in producer-consumer relations, which changed trade routes and resulting distribution patterns. Can stoneware be primarily seen as trade good or must one rather assume that they were used as containers for all sorts of commodities like Rhenish Bartmann jugs, which were shipped in large numbers to England to serve as transport containers for wine retail? Did preferences for specific stoneware workshops exist in past communities, which resulted in rising demand, or even the founding of new workshops?

In addition to the trade and direct use of stoneware vessels, the session will also focus on their meaning for the consumers. Was Rhenish stoneware really an expression of a "Hanseatic culture" in an urban context, as postulated in past research, or do finds in rural settlements in the Baltic paint a different picture? Were stoneware vessels really seen as part of a wealthy table or is this interpretation more likely to be due to the bias of the archaeological record? Did consumers care about the origin of products?

ABSTRACTS

1 DISTINCTION OF PROTO- AND FULLY DEVELOPED STONWARE FROM BRÜHL-PINGSDORF, SIEGBURG AND BEYOND WITH NON-DESTRUCTIVE XRF ANALYSIS

Abstract author(s): Wilke, Detlef (Dr. Wilke Management & Consulting GmbH) - Stephan, Hans-Georg (Institut fuer Kunstgeschichte und Archäologien Europas, Archäologie des Mittelalters und der Neuzeit, Martin-Luther-Universität Halle-Wittenberg)

Abstract format: Oral

After several centuries of large-scale regional and far distance export orientated earthenware production in the left-Rhenish potter's villages of Badorf, Eckdorf and Pingsdorf, proto-stoneware was developed around 1200. At the same time pottery production was intensified for the first time on a large scale in Siegburg, some 20 km across the River Rhine, where even higher quality tertiary clay deposits allowed for the technical development of fully sintered stoneware in the course of the 13th century. During the 14th century Siegburg acquired its leading production and export position, which was kept for almost three centuries. As in case of proto-stoneware the commercial attractiveness of fully fused stoneware motivated other workshops to join this technological and stylistic trend in the later middle ages, although often on a much lower production scale and for a shorter period of time only.

Indeed in Brühl using clays from nearby Pingsdorf, a production of fully developed stoneware with almost identical stylistic features has been established, which is difficult to be distinguished from Siegburg ware by mere visual criteria, particularly in highly fragmented status. Non-destructive X-ray fluorescence analysis is an appropriate method for allocating both intact museum specimens as well as sizeable sherd collections from archaeological find contexts to Siegburg and Brühl-Pingsdorf element patterns, respectively, which is based on minor compositional differences in the clay deposits on both sides of the Rhine valley.

The early Rhenish production sites were of crucial importance for the subsequent European stoneware manufacture. Inter alia other pottery locations in the Rhineland as well as in Hesse, Lower-Saxony and Central Germany were influenced by their innovations and participated in the development from c. 1250 onwards.

2 LATE MEDIEVAL COPYRIGHT VIOLATION? „MANGANESE VIOLET PROTO-STONEWARE“ - A BESTSELLER AND ITS POSSIBLE IMITATIONS

Abstract author(s): Hanauska, Petra (Landesamt für Denkmalpflege Hessen, hessenARCHÄOLOGIE) - Sonnemann, Thorsten (Archäologisches Museum Frankfurt)

Abstract format: Oral

The late Middle Ages saw in Germany the distribution of a pottery product, immediately recognisable by its characteristic colour and its metallic gloss – the so-called Manganese Purple Proto-Stoneware. It must have been very popular with costumers, because it was produced at several sites in today's state Hessen. At least one more production centre was situated outside Hessen in Mayen (Rheinland-Pfalz). Because the ware was so popular, it comes to light in a large number of late medieval settlement contexts for example in the Rhein-Main-Area.

Two of these pottery villages, Dippenhausen and Aulhausen, are neighbours in the Rheingau area, which is why their products are called “Rheingau Ware”. The earthenware comprises mainly cooking pots while the Proto-Stoneware came in handy for drinking vessels, namely jugs and beakers. The products of these two villages are so similar, most museums did not even label them separately in their collections. This is why statements about each village's economic potential are impossible without scientific analyses, in this case with a hand-held XRD analyser. Who supplied whom with ceramics?

Around 100 km to the northeast lies Aulendiebach, another production centre of Manganese Purple Proto-Stoneware and some of these products were also examined by a hand-held XRD analyser. The most remarkable thing is, that the workshops in Aulendiebach also produced earthenware beakers with a purple slip on the outside (!) as to imitate their proto-stoneware cousins. It seems that the customers cared more about the colour than about the suitability of the beakers for drinking liquids. Can we trace here late medieval product pirates? Or were these bargain goods?

Since the research on Hessen's Manganese Purple Proto-Stoneware is still in progress, the presentation summarises the current results from the “classical” archaeological investigations as well as those that were achieved by undertaking chemical analyses.

3 MARBLES: THE ENIGMATIC ALL-ROUNDERS AMONG STONEWARE

Abstract author(s): Liebetrau, Sabrina (freelance archaeologist)

Abstract format: Oral

In the sixteenth century, stoneware marbles began to replace the centuries-old earthenware types. Two centuries later, the Hessian pottery production centre Großalmerode reportedly produced millions of brownish salt-glazed stoneware balls called ‘Knicker’ or ‘Schusser’ and sold them all over the world. These stoneware marbles seem to have been so characteristic of the place that they were even included in the town's coat of arms (together with the famous crucibles) when Großalmerode was granted town rights in 1775. Quite often recovered from excavations, and mentioned in reports and papers, they are rarely discussed in detail. Therefore, it is still not fully understood what people actually did with the masses of stoneware balls.

Combining archaeological, historical, and cultural anthropological data, this study seeks to clarify the use and distribution of the variously sized stoneware balls between 1600 and 1900. The key to interpreting them lies in their multi-functionality. While eighteenth century sources describe production methods and trans-regional trade, their claims that the stoneware balls were used as toys and ammunition in shotguns and cartridges are not fully convincing given the huge production numbers. A look at rural customs shows that there may have been an everyday use in bird hunting with blowguns until the nineteenth century. Another possible explanation would be a technical use, which could explain not only the large production volume and long-distance trade but also the range of sizes. Thus the talk presents a group of understudied stoneware objects which are closely related to stoneware vessels due to their mode of production, yet occupy several different niches in material culture.

4 FRENCH STONEWARE FROM THE WORKSHOPS OF SAVIGNIES (BEAUVAISIS): NEW RESEARCH

Abstract author(s): Miellé, Lauriane (Service Archéologique Municipal de Beauvais)

Abstract format: Oral

The first research about the french stoneware of the village of Savignies (Beauvaisis region) have beginning in the 1960s, by the Groupe de Recherche sur la Céramique du Beauvaisis (GRECB). The diffusion of the search stayed incomplete, and the articles on the topic are rare. Today, the workshops situated in the village are better known. The evolution of the ceramic activity is attested between the end of the medieval period until the XVIIth century.

The recent studies and the recent excavations make possible the elaboration of new typology, with the evolution of forms. A focus is realized about the tableware, which is traded in all the worldwide. The jugs and the the small cups are the best known models. Nevertheless, flasks, ewers, plates or more simply the lids are an important part of the

production. The “masterpieces “ -results from special order- are known thanks to the excavation realized in the town of Beauvais, situated at 12 km from the village of Savignies.

This paper is a synthesis about the new research.

5 ANALYSIS OF STONWARE FROM THE NORTH OF FRANCE BASED ON PRODUCTION AND CONSUMPTION SITES

Abstract author(s): Vincent, Vaiana (INRAP)

Abstract format: Oral

The Hauts-de-France region (located at the northern end of France) has several stoneware workshops in its territory, notably in the Beauvaisis region of Picardy. To this must be added the proximity of production sites in Normandy (Bessin-Cotentin, Domfrontais and, of course, Martincamp) and the Belgian workshop of Bouffioulx, not forgetting the Rhine stoneware which are barely 200 km from the study area. More recently, a new stoneware production site was uncovered last year in the Pas-de-Calais, in the commune of Montreuil-sur-Mer. This paper will present the uncovered production, dated to the end of the 16th-beginning of the 17th century, its similarities and particularities compared to other objects of the same period. Secondly, an analysis of the stoneware from the consumption sites in the region will allow us to identify the places of production, which is not always an easy task given the extreme similarity of certain productions and the variety of colour and appearance of certain stoneware. Indeed, the example of the Montreuil-sur-Mer workshop, of which, to our knowledge, no clay-to-make-stoneware is known in the region, shows that the clay is likely to have been imported, which greatly complicates identifications. Analyses are underway. Another interesting point is the concomitant presence, on the consumption sites, of Siegburg and Beauvaisis stoneware. In fact, these two centres produced identical objects, which are sometimes difficult to distinguish with a fairly similar evolution. However, the analysis of their representativeness on the consumption sites shows a differential distribution, probably illustrating different trade flows and preferential networks.

6 STONWARE PRODUCTION ALONG THE MEUSE IN BELGIUM. HIGHLIGHT ON A DEVELOPING FIELD OF RESEARCH

Abstract author(s): Pirson, Marisa (Agence Wallonne du Patrimoine)

Abstract format: Oral

Belgium stands in the middle of the European stoneware sphere: situated right at the west of the famous German centres, it is known for its workshops in Châtelet-Bouffioulx, especially active between the 15th and 17th centuries. But other little-known stoneware production centres seem to have existed as well, including along the river Meuse, where traces of potters have been observed. Historical research in the 19th century mentioned them, and from the end of the 20th century, archaeology has brought to light some solid evidence.

In Namur, misfired stoneware from the 17th and 18th centuries has been excavated during archaeological digs that took place in 2020 and 2021 on the « Herbatte » site. According to the archives, they could come from the manufacture of Jean-Baptiste Chabotteau, who seems to have started his stoneware production upstream of the Meuse at Dinant, before developing workshops in Namur as well.

We can connect those production shreds to discoveries made at the consumption site of the « Hôpital Saint-Gilles » in Namur, where a waste pit dating to the same period and containing lots of similar stoneware was dug out.

In Huy, further on the Meuse, other shreds of misfired stoneware and production artefacts were found in 1999 on the « Place Saint-Jacques » site. Dating from around the same period, the workshop from which they came from was not found either.

The Meuse's stoneware is richly decorated with a wide variety of ornaments mostly moulded then applied, coloured in blue and mauve. It can be linked to the Westerwald productions from a typological and decorative point of view. However, it developed local and regional particularities that enlighten us on the local trends and on the way of life of those populations.

7 NEW INSIGHTS INTO EARLY STONWARE IN AMSTERDAM

Abstract author(s): Jayasena, Ranjith (Gemeente Amsterdam)

Abstract format: Oral

In recent years the development of a typo-chronological overview of ceramics in Amsterdam, based on the national classification system of ceramics, known as the Deventer System, triggered a renewed analysis of ceramic assemblages and their contexts excavated in Amsterdam since the 1950s. This exercise, with a key role for stoneware, resulted in a refined ceramics chronology, as well as new insights into the chronology of the urban development. For decades the dating of the city's earliest ceramics was under debate. For example, the transition from proto-stoneware to real

stoneware was dated earlier in Amsterdam compared to the rest of the country. These differing interpretations had impact on the theories about the city's development in the 13th and 14th century. New insights not only synchronised the chronology of stoneware with the rest of The Netherlands, these also offered new dating information refining our insights into the introduction of stoneware on a national scale.

8 BEER, BURGHERS, BERGEN – MEDIEVAL AND EARLY MODERN STONEWARE SEEN FROM NORWAY

Abstract author(s): Demuth, Volker (Museum of Archaeology / University of Stavanger)

Abstract format: Oral

As a country without domestic pottery production from the 11th to the 17th century, ceramics from Norway reflects the northern European trade and use of pottery in this period in a special way. Bergen was the largest medieval city in Scandinavia and the largest town in Norway before industrialization. The city housed one out of four Hanseatic kontors and a large migrant community from Hanseatic towns. Archaeological excavations provided a large pool of stratified archaeological material, with ceramics as the largest find group and stoneware as one of the most frequent types of pottery. Outside the urban centers, much less medieval and early modern ceramic is known in Norway, but stoneware from several non-urban findspots, shed informative light on distribution and use of these wares.

German stoneware” is a much-used term in historical archaeology, yet it comprises different ceramic wares, which despite technological and functional similarities, may be interpreted on their respective cultural-historical background. Wares as Rhinish proto-stoneware, lower Saxon medieval stoneware, fully developed Siegburg stoneware and Renaissance stoneware with molded decoration reflect quite specific social and economic phenomena and should be discussed accordingly.

One thing that strongly links many of these vessels, is however their obviously primary use for the consumption of alcoholic beverages. In a Norwegian context, stoneware illustrates mainly the import and consumption of beer from the Hanseatic cities, but also the import and use of wine seems to certain degrees reflected in stoneware finds. Aside the purely economic aspects of this barter, drinking habits are also highly social issues, which are highlighted by the presence of stoneware-vessels. The Norwegian case may offer a foil to discuss general cultural-historical aspects concerning the use and distribution of stoneware in a broader perspective.

9 “MY THOUGHTS ARE WHIRLED LIKE A POTTER’S WHEEL” – STONEWARE, SCOTLAND AND IRELAND

Abstract author(s): Hall, Derek (Independent Researcher)

Abstract format: Oral

Medieval Scotland always looked towards Continental Europe for its trade and contact and this is probably best expressed in William Wallace’s ‘Lubeck letter’ of 1297 after his victory over the English at the Battle of Stirling Bridge telling everyone that Scotland was open for business again. This strong relationship is reflected in the wide range of imported pottery that is recovered from excavations in the burghs and monasteries of what was a vibrant independent Kingdom until its Union with England in 1707. Stoneware vessels from Germany and France begin to appear in Scotland from around 1350 and are recovered from excavations in the major Scottish burghs and monastic houses. This paper will consider the results of more than 40 years of excavation, largely in advance of development, and assess what sorts of vessels are represented, where they are coming from, how they got to Scotland and why Stoneware manufacture in Scotland is not something that really happens until the massive Industrial boom of the 19th century. A brief overview of stonewares excavated from Dublin in the Republic of Ireland will also be given.

10 NOT ONLY FOR DRINKING PURPOSES - FUNCTIONS OF HIGHLY DECORATED RHENISH STONEWARE IN CENTRAL EUROPA IN THE 16TH CENTURY

Abstract author(s): Pfeiffer, Sören (LVR-Landesmuseum Bonn)

Abstract format: Oral

The highly decorated stoneware of the 16th century has been brought to our attention by the collecting activity at the time of historicism. Apart from its form and its technological features, it was considered part of aristocratic table manners precisely because of its ornate design. However, the applied illustrations also show that the vessels were used in various functions in the early modern period and were involved in actions outside of the context of drinking. These include, for example, diplomatic gifts, the use as a baptismal vessel or the integration into the culture of remembrance. This contribution attempts to present the range of different functions of rhenish stoneware of the 16th century. For this purpose, art historical information, historical sources and, of course, archaeological sources are included in the analysis. Furthermore, the lecture tries to take a quick look at the table manners of the 16th century in

Central Europe, to outline existing differences and examines stoneware as a drinking vessel in this context. In addition, the question is raised whether highly decorated stoneware was only to be found at the table of the nobility or not.

11 CERAMIC COMPETITORS - THE DISTRIBUTION OF 16TH CENTURY SIEGBURG AND COLOGNE STONEWARE IN THE WEST

Abstract author(s): Keller, Christoph (LVR - Amt für Bodendenkmalpflege im Rheinland)

Abstract format: Oral

During the 16th century highly decorated brown stoneware was developed by potters in Cologne (Germany). By the mid 16th century some of them moved to nearby Frechen, where they had family ties, and started to produce the same kind of decorated wares there. During the second half of the 16th century potters at Siegburg started to copy designs and vessel forms in a white stoneware.

All three production centres were competing for the market exporting their products to northern Europe. While the potters guild from Siegburg could rely on long established trade links within the network of the Hanseatic league, the newcomers were forced to set up new connections. Cologne as the major trade hub in western Germany was the first step in this newly established trade system. Toll records of the Rhine trade differentiate between “Cologne” and “Siegburg” pottery indicating that custom officials as well as customers were well aware of the different wares.

By looking on the distribution of the different Rhenish stonewares in the west of Europe (from Spain to Ireland) and in the New World the talk will focus on the question, why Siegburg stoneware was never really able to expand its sales area beyond the Hanseatic network in the North Sea and the Baltic. Did they rely on their established trade connections, while potters from Cologne and Frechen made contacts with the rising merchant community in England and the Netherlands?

12 STONEWARE GLOBAL TRADE SYSTEM AT STRAIT OF GIBRALTAR AND CÁDIZ BAY

Abstract author(s): Ruiz-Gil, José-Antonio (Universidad de Cádiz)

Abstract format: Oral

The objective of the communication to this session of the EAA will be to present the known and published stoneware specimens from the southern coasts of Spain (Bay of Cádiz and Strait of Gibraltar). In this sense we have two types of stoneware characteristic of different but very specific periods. Its distribution marks very precise historical moments in the Modern Age (second half of the 16th century-early 17th century) and in the Contemporary Age (19th century).

The first of these consists of three pieces from the vaults of the procession cloister of the convent of Santo Domingo in Jerez de la Frontera (province of Cádiz). These are bottles that have a ball-shaped body, a neck with a handle and a characteristic decoration of a bearded character (“bartmannkrüge” in Dutch) on the neck and the beginning of the belly opposite the handle. In Spain they are related to the Catholic Cardinal Roberto Bellarmine, which is why they are called “belarmines”. It is a very specific container, of a product that probably had to be transported from Flanders.

The second is also very defined. They are also bottles, but cylindrical in shape, with a short neck and a handle. As a main feature, they have stamps printed with the names of the distilleries that produced the packaged product: gin (Fine Genever type). The specimens we have studied belong to the bays of Cádiz and Algeciras. The distribution centre would be in Gibraltar and maritime communication explains the origin of the cans found both at the bottom of the sea, and in coastal towns, such as El Puerto de Santa María, San Fernando, or Jerez de la Frontera. In addition, the existence of a smuggling land route is shown.

13 SMALL FRAGMENTS HERE AND THERE, THEY'RE ALMOST EVERYWHERE! STONEWARE IN FINLAND

Abstract author(s): Helamaa, Maija (Muuritutkimus Ltd.)

Abstract format: Oral

Small amounts of stoneware are found in almost every archaeological site, especially urban contexts, around Finland. Medieval and post-medieval rural sites are less excavated, but stoneware sherds are present in many cases. The medieval vessels are introduced by Hanseatic merchants and the trade routes of the Baltic Sea play major role during the post-medieval and early modern periods as well. This paper will give a basic overview of stoneware distribution in Finland.

The pottery assemblages in Turku, southwestern Finland, allows to examine the stoneware in more detail. A case study focuses on the post-medieval vessels found in different parts of the town. Does the status of the districts reflect in the amount or types of stoneware found in them?

The imported stoneware is not listed in the 16th and 17th C. toll registers. They were perhaps shipped in really small amounts and / or considered as too little value. The stoneware vessels may have been sent as gifts as well. Maybe they were sometimes brought by merchants and sailors who didn't have to declare their own small personal cargo.

Stoneware was rare but still customary in the households in Turku. Were the vessels special, or just convenient for liquids? Were they in everyday use? When it comes to the highly decorated renaissance wares, what did the decoration mean to Finnish consumers? Did they know the meanings of the depictions on their jugs and tankards or were they just nice pictures?

14 STONEWARES ON THE PERIPHERY

Abstract author(s): Ratkai, Stephanie (Barbican Research Associates)

Abstract format: Oral

Stonewares were plentiful across Europe except when and where they were not. Can we give a universal meaning to stoneware in any given period without examining the relative frequency and geography of these wares?

This paper will try to alter the perspective from which stonewares are viewed in England. This arises largely from Eastern England and important sea and riverine ports such as London, Southampton, Newcastle and Exeter and their hinterlands. The perspective is also influenced by the relative proportion of work undertaken in different areas of the country, but the West Midlands, which forms the basis of this study, although relatively impoverished in terms of large excavations has had enough excavation in both urban and rural sites to provide sufficient comparanda for the late 15th to mid-17th century.

Site types considered in this study will include Dudley Castle, Stafford Castle (both in Staffordshire) and Wigmore Castle (Herefordshire), important towns and cities such as Coventry, Warwick and Birmingham (Warwickshire), Hereford and Shrewsbury, religious sites such as Haughmond Abbey (Shropshire) and rural settlements including Burton Dassett (Warwickshire).

Does the relative infrequency of stonewares in the West Midlands bestow a different value on them. If so, how might this be revealed? How do we account for 'motto jugs' in rural areas where the population, even if not illiterate, was unlikely to be familiar with a foreign language.

15 NO JUGS NEEDED? THE LACK OF STONWARE IN PARTS OF DENMARK

Abstract author(s): Witte, Frauke - Hartwig, Anders (Museum of Southern Jutland)

Abstract format: Oral

Since stoneware began to be produced in many areas of Europe, it became a sought-after commodity in areas where local production of stoneware was not possible. The lack of raw materials and technology also led to imports in Denmark over several centuries. The oldest stoneware imports date from the 14th century from the Rhenish area.

Especially in excavations in towns, various stoneware is found in the cultural layers. In the countryside, on the other hand, only isolated sherds are found. Naturally, the accumulation of finds is concentrated in the merchant towns, where the ships with the merchandise docked. From there, the goods were distributed into the countryside - but seemingly only in very small quantities.

Apparently, the goods only reached the north and north-east coasts by sea, but the country was not provided by land. This proves the trade routes that were the main routes for goods traffic to Denmark during the Hanseatic period and afterwards. And it also proves that people only docked in certain places and that the distribution of goods from there was only continued into the country to a limited extent.

This paper will focus on the stoneware on the southern part of Denmark and give an overview about the finds in towns and on the rural sites.

16 THE GLOBAL DISTRIBUTION OF RHENISH BARTMANN JUGS IN THE AGE OF COLONIALISM

Abstract author(s): Röser, Christian (LVR-LandesMuseum Bonn)

Abstract format: Oral

One of the most widespread and iconic products of the Rhenish stoneware potteries were the Bartmann jugs (also known as bellarmines). They were produced in different and over time changing variations in a number of production sites in the Rhineland, among which Frechen is the most prominent due to its high output quantities. From there, Bartmann jugs were exported via the established trade routes along the Rhine, initially downstream to the Netherlands and from there eventually further to England. In both countries, Rhenish Bartmann Jugs were an integral part of material culture and drinking habits in the early modern period. Understanding the ways in which the vessels spread beyond this into the European powers' overseas colonies is more complicated and cannot be reduced to the idea of Bartmann Jugs being distributed as a commodity. Evidence shows for example that they also served as containers for

various liquids that were used on board ships or in the colonial sites. Therefore, this paper aims to give an overview of the Bartmann Jug phenomenon, starting at the production sides and following the trade routes and shipment to their final destinations while also considering their cultural impact in the respective environment.

281 CONTEMPORARY ARCHAEOLOGY AND COMMUNITY INVOLVEMENT [PUBLIC ARCHAEOLOGY COMMUNITY]

Session theme: 3. Heritage Narratives and Representations

Session organisers: Benetti, Francesca (Independent Researcher) - Oldham, Mark (Norsk institutt for kulturminneforskning) - Westmont, Camille (University of Cambridge)

Session format: Regular session

Contemporary archaeology is a growing field of interest, and often deals with sensitive topics (e.g. conflicts, or marginalised social groups). Due to its nature closely linked to today's society, it can enhance sense of place or social cohesion, thus contributing to a positive political agenda, fostered both globally with the UN 2030 goals, and in the EU (through policies and dedicated funding streams). However, it can also be exposed to political (mis)use or critique. A strong link with local communities is often a typical trait of contemporary archaeology projects, and it requires particular attention from archaeologists.

This session aims to explore how communities are (or can be) involved in contemporary archaeology projects, what are the opportunities, but also the risks to be taken into account, and how can we mitigate them. What are the factors of success of a contemporary archaeology project involving local communities? Can collaboration between archaeologists at the European level (e.g. through EAA Communities) help? Is it possible to find elements useful to build a shared practice?

ABSTRACTS

1 WYLDemerck: COLLABORATIVE CONTEMPORARY ARCHAEOLOGY WITHIN A DUTCH-MOLUCCAN POSTCOLONIAL CONTEXT

Abstract author(s): Kok, Marjolijn (Bureau Archeologie en Toekomst)

Abstract format: Oral

Collaboration at every level of research and contemporary archaeology is a fruitful combination. The participants have intimate knowledge of the material culture and contemporary archaeology can explore new ways of looking at their heritage. Furthermore, this is the kind of heritage that migrant groups can take equal part in. In this way they become part of the heritage of their (not-so) new homes. Rules and regulations may pose problems but projects like these can also shift policies. And contemporary archaeology does not necessarily depend on excavation, leaving more room to manoeuvre.

In the project Wyldemerck contemporary archaeologists and old-inhabitants, family and local friends do archaeological research at an Islamic Moluccan camp in the Netherlands.

After the independence of Indonesia, the Moluccan people who had served in the Dutch colonial army (KNIL) were ordered to move to the Netherlands for a few months but most never returned home. On arrival in the Netherlands they were fired from the army and forced to live in 90 camps, including former concentration camps. A minority was Islamic and after years of struggle to practise their religion freely, were placed in a separate camp in Wyldemerck. They lived there for fifteen years until 1969. They were moved to housing in several towns over hundred kilometres away. This project is one of the first successful Dutch archaeological projects where the participants determine the research goals. It goes beyond the local as people live across the Netherlands and connects with the locals of Wyldemerck who still have bonds with the Moluccan people. We rediscovered the location of the second mosque in the Netherlands. A forgotten colonial history within the Netherlands has gained a place in the heritage discourse. Showing that migrants have important histories to tell that intertwine the global and the local.

2 COMMUNITY ARCHAEOLOGY IN THE MIDDLE MOUNTAINS OF VERSILIA (ITALY)

Abstract author(s): Anichini, Francesca - Gattiglia, Gabriele - Basile, Salvatore - Sciuto, Claudia (University of Pisa)

Abstract format: Oral

In the last four years, The MAPPa Lab of the University of Pisa has been researching the abandonment processes in the mountains of Versilia, northern Tuscany (Italy). An area we define as the middle mountains: neither characterised by the highest peaks nor hills but by the continuous negotiations between humans and the environment. The research focuses on the last two centuries, particularly the second half of the 20th century, strongly scarred by the Second

World War. How did landscapes, tasksapes, and human and non-human relationships on the mountain change when the world started accelerating? Which tangible and intangible traces mark these transformations? And, which is the perception of the abandonment processes by the local communities? Beginning to observe and listen needs of the communities, we started to build a multilayers map, including mapping and incorporating data from archaeological surveys, memories and identity co-designed cartography involving schools (teachers, children, and families), collecting ethnographic data through interviews, and more than one collective counter-mapping of memories associated with landmarks. The aim is to link and preserve tangible and intangible memories to return as the result of shared and community work. Working with communities is not simple: it requires work, continuity, empathy, and proximity to create relationships and confidence and share knowledge and skills with a common aim.

3 FIRST WORLD WAR REMAINS IN THE ALPINE AREA IN ITALY: POTENTIAL AND PITFALLS OF PUBLIC INVOLVEMENT

Abstract author(s): Benetti, Francesca (Independent Researcher) - Cappellozza, Nicola (SAP Società Archeologica)

Abstract format: Oral

In Italy, the law for the protection of cultural heritage states that archaeological research must be authorised by the Ministry of Culture, and all archaeological remains have to be reported to the Soprintendenze (peripheral offices of the Ministry). Hobbyist metal detecting is forbidden in archaeological areas, but allowed in all other areas, provided that metal detectorists abide by the law and report archaeological finds. However, First World War remains are often not perceived as archaeology, and frequently not reported. This results in the loss of archaeological knowledge – but can have more serious ethical consequences. If finds are not scattered remains but part of a grave or of a primary deposition, an un-cautious excavation can result in the loss of the possibility to give the buried person a name, and therefore an identity. This presentation will explore operational pitfalls of the legislation, present some case studies and initiatives that archaeologists are doing to involve local communities, catalysing their interest towards common goals. Finally, we will call for a better structural collaboration with the public. Due to climate change, which is putting at serious threat several remains dating to the First World War in the Alpine area, this is a urgent call for action.

4 LEGAL DEFINITIONS AS A CORNERSTONE FOR PROTECTING ARCHAEOLOGICAL FINDS FROM ILLEGAL EXPORT AND TRADE

Abstract author(s): Antal, Robert (Institute of Archaeology of the Czech Academy of Sciences) - Lewis, Michael (British Museum)

Abstract format: Oral

Defining ‘cultural property’ is fundamental to protecting archaeological heritage, but these legal definitions can vary from state to state, even within individual territories - England within the UK is a good example of the latter. Consequently, similar artifacts may have differing legal status (and therefore protection) depending on their country of origin. The task of this contribution is to examine - using the example of the Czech Republic and England (within the UK) - how these legal definitions affect the volume of protected objects and human behaviour towards cultural property, specifically in relation to searching for archaeological finds to trade or sell. Furthermore, we will consider how Europe might, on a theoretical level, benefit from states moving together in developing legislation that could protect the exploitation of archaeological material for personal gain. In order to comprehensively examine the problem, obstacles preventing states in moving national legislations together will be presented.

5 METAL DETECTING: A HOBBY OF RANDOM SEARCHING FOR CASUAL LOSSES?

Abstract author(s): Westcott, Keith (DIF. The Detectorists Institute & Foundation)

Abstract format: Oral

Regularly practiced by approximately 40,000 hobbyists, Government figures state that over one million individuals across England and Wales have used a metal detector at some point, across a 12-month period... current issues of a fast-depleting resource of portable antiquities and a scarcity of ‘undetected’ land, go hand in hand.

Defended by those who often prosper from the highly monetised sector of metal detecting, the narrative of pursuing a harmless hobby finding ‘decontextualised’ old things, cloak the reality of an on-mass targeting of historical artefacts and archaeological sites. Evidenced in the approach to promoting ‘pay to dig’ rallies, locating digs on and around recognised archaeological sites is a preferred way to attract the numbers required, to pay landowners and create a profit. Coinciding with today’s media fixation with the monetary outcome of finding treasure, is the online availability of digital archives and platforms providing lidar, aerial images and locations of many ‘yet to be defined’, archaeological sites. Often unaware of their land’s historical significance, the landowners, and farmers in considering their typical yield per acre, welcome the income from a visit from a few hundred detectorists... detectorists who know very well (or conversely, should know) the archaeological potential of the land.

A community approach: The metal detector, particularly when spatially plotting finds/dating evidence in combination with geophysical surveys, is an effective archaeological tool. Introducing DAPAS: Detailed and Partial Artefact Survey - Our award-winning course held at the University of Oxford is designed to create a new Practitioner level of detectorist, a competent assistant to archaeologists capable of field walking whilst detecting, interested in all material artefacts. Hobbyists too, can adopt our conservational best practice approach and engage with local community archaeologists and history societies.

Detectorists have a great potential in becoming citizen scientists... our mission is to provide the opportunity.

6 CULTURAL HERITAGE AND TRADITIONAL KNOWLEDGE IN A RIGHTS PROCESS IN NORTHERN NORWAY

Abstract author(s): Thuestad, Alma (NIKU - Norwegian Institute for Cultural Heritage Research)

Abstract format: Oral

The Finnmark Act of 2005 transferred about 96% of the area in Finnmark in northern Norway to the county's inhabitants. The Finnmark Commission has, since 2005, had a statutory duty to survey existing rights of use and ownership people in Finnmark have acquired based on long-term use of this formerly state-owned land. The Norwegian Institute of Cultural Heritage Research has, on behalf of the Commission, undertaken expert reviews on historical and contemporary traditional use of land and natural resources throughout the region. The reviews are primarily based on map-based interview surveys of local and Indigenous knowledge concerning traditional use. This includes information on physical structures and remains of structures linked to traditional use. Through this work, a unique knowledge base on traditional use of land and natural resources in a multi-cultural area is under preparation. Cultural heritage encompasses all traces of human activity in our physical environment, including places associated with historical events, beliefs and traditions according to Norwegian legislation. Cultural heritage, both immaterial and material, is thus a part of the knowledge base for the Commission and the ongoing rights processes in northern Norway. Some of the Commission's rulings regarding rights of use and ownership are now contested by locals and special interest groups, for example reindeer herder's associations and local land use associations. The overall aim of this study is to investigate the role of cultural heritage and traditional knowledge in the ongoing rights processes in northern Norway. I will; 1) discuss our methodological approach aimed at providing data relevant and applicable for such a rights process, and 2) clarify and discuss what kind of data concerning use and heritage the Commission and local associations, respectively, regard as relevant and important for these processes.

7 ORDINARY CITIZENS AT THE FOREFRONT OF HERITAGE PROTECTION

Abstract author(s): Ulrich-Horn, Marietta (ARCH-Europe) - Benard, Cheryl (ARCH International)

Abstract format: Oral

Much attention has been paid - and appropriately so - to the dangers posed to historic sites and archaeological work by "civilian intruders" - everything from tourists to careless campers and acquisitive amateur scavengers.

These indeed can cause a lot of damage. But there is a converse side. In many locations, it is the ordinary citizens who love, guard, protect, and are instrumental in the conservation of heritage sites and archaeological exploration.

In one of our project locations, for example - Pavlopetri in Greece - the local population waged a decade long battle against the ships anchoring in their bay and damaging the underwater city it held. They formed human chains from the coastline into the sea, sent petitions to Athens and never gave up.

Dr. Nic Flemming, the lead archaeologist who discovered the site, credits their efforts with rescuing this unique place for the next generation of archaeological explorers.

In Austria, an innocent Alpine lodge built for the convenience of hikers and mountaineers, twice was occupied by militias and army units and was burned to the ground twice, in WW I and after lovingly being rebuilt, again in WWII.

Today, civil society groups and heritage organizations from three countries meet at this site regularly to celebrate festivals together and to talk about shared concerns such as environmental protection of the surrounding forest and meadows. The role of Citizen Historians and Citizen Heritage Activists and their strategies around cooperating with heritage professionals to protect sites will be explored in our paper.

8 COLLABORATIVE AND COMMUNITY-BASED ARCHAEOLOGY: A VIEW FROM THE UNITED STATES

Abstract author(s): Bello, Charles (Federal Emergency Management Agency) - Dillian, Carolyn (Coastal Carolina University)

Abstract format: Oral

Collaborative and Community-Based Archaeology continues to be an important and relevant topic in our profession – involving an ever-increasing (& often innovative) range of activities. I have organized nine sessions on this topic at Society for American Archaeology conferences – with over 60 participants. We remain committed to the concept of conducting research (& other types of historic preservation endeavors) in effective partnership with a wide spectrum of stakeholders. This just makes sense, is only fair, and contributes greatly to research. Clearly, our projects impact indigenous, resident, and descendant communities in many ways. And, although things are changing, often these groups still have relatively little input into what “others” are trying to accomplish. There are key concepts and recurring purposes and goals: tangible and intangible aspects of heritage; roles of descendant communities / other stakeholders; equitable decision-making; whole-community benefits; insider perspectives; and long-term community commitments. Community involvement gives a voice to groups that have been essentially voiceless, and also empowers all players, especially on projects that involve “multiple pasts.” Soliciting other views and asking for input just makes sense and is appropriate. As for my tenure as an archaeologist employed by the U.S. Federal Government, community involvement and consultation with interested parties is par for the course. More and more often, there are real opportunities for the whole-community (Indigenous, ancestral, recent residents, landowners, politicians, educators, etc.) to become involved in projects in really meaningful ways. It seems that we have now entered the “alternate dimension of conventional archaeology” (to quote a 2008 article in *Current Anthropology* assessing community involvement in South Africa). From my viewpoint we as a profession are now pretty well engaged in this new paradigm – we just have to continue to move forward!

9 PUBLIC PARTICIPATION, LANDSCAPE AND ARCHAEOLOGY FOR A COMMON WELLBEING

Abstract author(s): Maruri Arana, Ainhua - Pérez Cano, Maria Teresa (University of Seville) - Stagno, Anna (Università di Genova)

Abstract format: Oral

Archaeological sites have an intrinsic and undeniable relationship with landscape, since the choice of their emplacement is motivated by the strategic advantages and the characteristics of the territory. The accumulation of traces and knowledge has shaped the landscape over time, becoming a complex reality that shows human activity throughout the centuries, but which, nevertheless, is fragile, being at risk of abandonment and destruction. For the archaeological complex under consideration, taking its landscape dimension into account may represent new opportunities on different levels: understanding or explaining its original meaning and its evolution later of protection, of management, in a situation in which the social demand for its knowledge or enjoyment grows and, lastly, of management.

The definition of landscape since the European Landscape Convention (Council of Europe, 2000) defines landscape “as perceived by local people or visitors” which means that public participation must be part of any proposals involving landscape, and thus, archaeology, so it becomes a shared resource for the benefit of the population. Nevertheless, it is not always easy to involve people in this discipline due to the distance set by the technical level of it. This paper discusses the actual situation of the relations between archaeology, landscape and community participation, underlining the importance of making decisions with the engagement of society.

10 THE RELATIONSHIP BETWEEN THE GREEK PUBLIC AND THE UNDERWATER CULTURAL HERITAGE

Abstract author(s): Papadimitriou, Athanasia (Ionian University)

Abstract format: Oral

Highlighting the uniqueness and otherness of the underwater archaeological heritage and its inclusion in a wider social, political and economic context, require a contemplation in order to promote not only its commonly known but also its detailed history. In the context of underwater cultural heritage management, it is necessary that we redefine and redesign the targeted actions to communicate the vulnerability of the underwater cultural heritage to society and to expand the accessibility through active participation of the local community in its protection and promotion.

This paper examines the relationship of underwater antiquities with local society in southern Laconia. Thus, I focus on submerged and semi-submerged settlements as well as wrecks of ancient ships. More specifically, some of the sites that have been so far investigated in the research include Pavlopetri, ancient Asopos (modern Plytra) and the Kaptan Ismail shipwreck. The aim is to create a psychological profile of the local residents in order to identify their beliefs, their expectations, their interaction with tourism and finally their relationship with the maritime tradition of the area,

in order to create the appropriate management framework through the active and efficient integration of the local community and the local authorities. It then examines the ways in which scientific knowledge can be “translated” in order to present it in a simple and comprehensive way to the general public, creating the ground and the necessary tools for the development and evolution of innovative ideas.

Through the case studies, we will clarify the dilemma between the promotion and use of the underwater archaeological sites versus their protection, while highlighting that the best solution is the involvement of the local community.

11 **GROUNDING THEORY TO THE PRACTICE: BUREAUCRATIC AND POLICY PROBLEMS IN COMMUNITY ORIENTED SITE MANAGEMENT. THE CASE OF ITALY**

Abstract author(s): De Vivo, Caterina (Centro Studi Interdisciplinari Gaiola Onlus - Progetto Museo)

Abstract format: Oral

In 2020, Italy finally ratified Faro Convention officially recognizing the importance of engaging communities in cultural heritage management policies and strategies. In this framework, it is particularly relevant the innovation to the Italian heritage system introduced by the bottom-up approach to manage cultural heritage sites, which could become a model at European level. This approach, which started to be introduced in the early 2000s, is nowadays a very important tool in the Italian scenario; it is based on the idea of entrusting NGOs made of professionals with the task of managing abandoned or mismanaged archaeological sites or cultural institutions owned by the State (or other public bodies). Throughout the last decade, these experiences opened up the gate to community engagement projects and to community oriented management models, especially in respect to more traditionally managed sites, whose activities are more and more income oriented. Nevertheless, at a national level there are still many bureaucratic and policies implementation issues that are needed to be targeted to really implement the principles indicated by international guidelines. The involvement of volunteers, for an instance, is still very complicated for both a misunderstanding of the role of volunteers by the professionals themselves and legislative obstacles. At the same time, the private/public management of the sites still implies considerable sustainability problems which threaten the development of social projects that are often sacrificed to a more commercial use of the cultural heritage. This presentation is aimed at pointing out these issues starting from the direct experience in two bottom-up managed sites and in several state managed sites in the city of Naples (Pausilypon Archeological Park and Gaiola Underwater Park).

12 **AIMING SDG 11 ‘SUSTAINABLE CITIES AND COMMUNITIES’: URBAN ARCHAEOLOGICAL HERITAGE SITE INTERVENTIONS**

Abstract author(s): Hetemoglu, Asli (PhD candidate)

Abstract format: Oral

Population growth in urban centres leads to radical transformations in terms of super structural and infrastructural systems’ planning. Modern concerns and needs, such as industrialization, commerce, transportation, changing land use, and zoning, also pressure existing urban tissues and communities. Indeed, it leads to adverse impacts on urban archaeological heritage sites. Historic urban centres worldwide, such as Istanbul, Athens, and Rome, have faced such profound functional and social changes that test the ability to combine the maintenance of urban archaeological areas with new socio-economic realities. These changes must be well managed for the continuity of cities and communities.

On the other hand, the 2030 Agenda for Sustainable Development highlights the importance of culture in ensuring sustainability. SDG 11 and its targets, known as ‘sustainable cities and communities’, clearly point out the vital role of safeguarding heritage in making cities and human settlements sustainable amidst modern conflicts. However, historic urban areas confront severe challenges in balancing traditional and modern between a city of progress and a city of culture. This failure to establish a balanced policy in historic urban areas triggers conservation, management, and presentation problems for urban archaeological areas.

This research mainly aims to reassess the process of urban archaeological sites’ integration into ‘sustainable city’. Within this scope, different case studies from Türkiye, Italy, and the UK will be investigated to present the intervention ways and methods, especially in focusing on gains and losses. Besides, the term ‘sustainable city’ will be discussed in relation to urban heritage sites. How are urban archaeological sites affected by being conserved, managed, and presented under huge-scale modern architectural structures? Can urban archaeological sites be integrated into our contemporary lives without losing their cultural value?

Session theme: 3. Heritage Narratives and Representations

Session organisers: Dalen, Elin (Heritage management) - Kars, Eva (Commercial) - Bongers, Toon (University)

Session format: Regular session

Over the last 30 years, the archaeological field has significantly professionalised. It has evolved from a predominantly state-run sector to a development-led field where the responsibility of heritage management is divided between national agencies, universities, municipal governments, and private-owned companies. All the while, commercial archaeological companies are responsible for the majority of excavations, where new data is generated.

Despite this professionalisation, we are witnessing increased fragmentation. Fragmentation not only includes the division of responsibilities but can take many forms. On the one hand, data from commercial excavations may never be published or elaborated. On the other hand, the results from academic research may never reach people working in commercial archaeology or cultural management. Are we witnessing a gap between data generation, knowledge production, and agenda setting?

There are, however, promising examples of how to bridge these gaps. For instance, governments are allocating funds to study and synthesise data from old excavations, while heritage agencies are working with private companies and academia to set national research agendas.

This session critically investigates the characteristics and consequences of a fragmented archaeological field. Are the current developments for the better? In other words, has managing archaeological resources become a commodity instead of a field geared toward generating and preserving knowledge for future generations? Does a fragmented archaeological field lead to more efficient research and better results?

We welcome submissions from the entire archaeological field (e.g., academia, commercial archaeologists, and government officials) across all periods and disciplines to demonstrate, evaluate, and discuss fragmentation in archaeology with a solution-oriented approach.

ABSTRACTS

1 ARCHAEOLOGICAL LANDSCAPES OF CRIMEA UNDER OCCUPATION: FROM DESTRUCTION TO DECONTEXTUALIZATION

Abstract author(s): Yashnyi, Denys (National preserve)

Abstract format: Oral

After the occupation of the Crimea in 2014, the Russian Federation implemented several construction projects: the highway “Kerch-Sevastopol”, the gas main “Kuban Crimea”. An obligatory part of them was illegal excavations of more than 150 archaeological sites in the area allocated for construction, which led to the destruction of historical landscapes in certain regions.

During our research we analyzed the illegal digging carried out by Russia on the territories of the medieval agricultural landscapes of the South-Western Crimea and the defensive structures of the Bosporan kingdom in the East of the peninsula.

The system of fortifications of the Bosporan kingdom in the East of the Crimea consisted of three ramparts known today as Akmonaisky, Tiritaksky and Chokraksky. In 2014–2018 local archaeological excavations were carried out on these objects, but the fortifications were investigated exclusively at the sites of future trenching and construction. The historical landscape was divided into separate sections and lost its integrity. To facilitate the work of construction equipment, gas pipes were laid through the gates of the defensive ramparts, which are unique for this region.

“Stone mounds” or “cairns” that had been part of the medieval agricultural landscape of the Southwestern Crimea were subjected to illegal excavations for the construction of the Kerch-Sevastopol highway in their place. During digging of these objects on the Kok-Agach-Daglary Plateau, due to lack of experience and qualifications, archaeologists from the Institute of Archeology of the Russian Academy of Sciences made a mistake in interpreting the objects and identified them as specific mounds and sanctuaries of the Tauris.

Using the example of how Russia treated these historical landscapes, we can say that large-scale construction in the Crimea after 2014 led to the mass destruction of archeological monuments, their misinterpretation, and subsequent decontextualization.

2 ARCHEOLOGY IN CULTURAL POLICY OF MONTENEGRO: CURRENT POSITION, CHALLENGES AND GUIDELINES FOR IMPROVEMENT

Abstract author(s): Medin, Dušan (Faculty of Culture and Tourism University of Donja Gorica)

Abstract format: Oral

In this paper, the author presents part of his research on the current position of archeology in Montenegro, the country where he lives and works. Despite the existence of (more or less) adequate legislation and an institutional framework, as well as a more than century-long tradition of archaeological excavations, and – the most importantly – big archaeological heritage from prehistoric eras to modern times, the situation in Montenegro regarding the status of archeology should be improved. For example, there is still no national archaeological museum, the Society of Archaeologists of Montenegro (founded in 1974) practically does not function for years, there is no archaeological scientific institute or faculty/department of archaeology (but also for ethnology, anthropology, art history, heritage, natural heritage, museology, archives and library studies...). Also, more than ten years the previous national cultural institution Center for Archaeological Research of Montenegro was shut down, and big transformation on cultural heritage protection sector in Montenegro was conducted – not always with good results in practice. On the other hand, fortunately, archeology is still present and archaeologists are active in some of the national and local cultural institutions (e.g. Center for Conservation and Archaeology, local museums), and in recent years thanks to the role of the Montenegrin Academy of Sciences and Arts. So, this paper points out the key challenges facing archeology in Montenegro, and offers guidelines for its improvement.

3 EVERY CITY IS UNIQUE, BUT SOME CITIES ARE MORE UNIQUE THAN OTHERS. COUNTERING FRAGMENTATION IN URBAN ARCHAEOLOGY

Abstract author(s): Bouwmeester, Jeroen (Cultural Heritage Agency of the Netherlands)

Abstract format: Oral

Independence is in the city's DNA. Every city is in competition with other cities, especially those nearby. This has been the case since the first cities were founded in the Middle Ages. Sometimes it seems as if urban archaeologists have adopted this. Many of them emphasise what is special about their city in order to maintain their own position within the city. After all, a city councillor does not want to hear what makes his city similar to other cities, but what makes it unique. Time and money for research is scarce, and the choice of local interest is quickly made. When companies conduct research in cities without their own archaeologists, it is usually no different.

This is reflected in supra-local synthesising research, or rather the lack of it. A focus on the particular ensures that underlying patterns between cities are not seen. And paradoxically, this in itself works against this local view. If you don't know what fits into the patterns, then you don't see the uniqueness either. Or everything becomes unique...

The consequences for the field are profound. In terms of theorising and unravelling larger patterns and connections, urban archaeology is at a disadvantage. But there are also major improvements to be made in terms of methods and techniques. And all this in the context of a changing system and role for archaeology in society.(1)

The tide can be turned. Initiatives are being taken at different levels. It is up to us as urban archaeologists to link up with them and engage in debate with each other. Both at regional and national level and internationally, such as in the EAA Urban Archaeology Community.

(1) Bouwmeester & Belford 2020: Introduction: issues, principles and practice. In: P. Belford & J. Bouwmeester, *Managing Archaeology in Dynamic Urban Centres*. (Leiden). p. 7-18.

4 FROM ARTEFACT TO ALGORITHM

Abstract author(s): Nicolaij, Stephan (WOODAN Foundation)

Abstract format: Oral

WOODAN is a free to use, public database on archaeological wooden artifacts: www.woodan.org. The project started in the Netherlands and is now expanding abroad, seeking specialists who are willing to work together in creating a central database for the collection and accessibility of wooden artifacts. This has led to a system that is already available in four languages (Dutch, English, German, and French) and contains several thousand artifacts.

The WOODAN Foundation is a private research institute that collaborates with researchers from several countries to produce a freely accessible database. As of now we are working with specialists from the Netherlands, Belgium, Germany, Poland, and Austria. Our main project for 2023 is part of an effort by the Flemish government to synthesize and publish commercially excavated data. Our goal for the following years is finding more specialists or creating new partnerships with whom to further develop or expand our system / data.

Building an international archaeological database comes with its challenges. First there are the logistical challenges, such as [how do we finance the database?], [how can we ensure the database remains independent and free to use?]

or [how can we get universities or companies interested in participating?]. Next there are archaeological challenges such as [how can you talk of archaeological periods when different countries may have different definitions?] or [how can you ensure that the lists that you use are uniformly understood and accepted?]. Finally, there are technical challenges such as [what kind of database do you build?] or [what is the best way to link to a publication (refer to, link to or host)?]. These and many more are the subject of a presentation and open discussion called From Artefact to Algorithm.

5 AMERICAN ARCHAEOLOGISTS ABROAD: EXPLORING THE BENEFITS (AND DRAWBACKS) OF EUROPEAN FIELD SCHOOLS IN PREPARATION FOR CAREERS IN US-BASED COMMERCIAL ARCHAEOLOGY

Abstract author(s): Knierim, Rebekka (SWCA Environmental Consultants, Inc.) - Beglane, Fiona (Atlantic Technological University, Sligo) - Vellanoweth, René (California State University, Los Angeles)

Abstract format: Oral

Thousands of American archaeology students choose from hundreds of overseas field schools each year to learn excavation and field techniques first-hand. Indeed, it is quite common to encounter an American archaeologist whose first archaeological field experience was through a European field school. Participation in a field school is typically required to graduate with an archaeology degree in American universities, and moreover, is often essential on a CV when applying for a position in Cultural Resource Management (CRM), the US equivalent of commercial archaeology. But do European field schools adequately prepare students for a career in CRM?

The presenter, an American supervisor of field schools in Ireland and California, and a hiring manager for a US-based CRM company, uses as a case study her experience supervising excavations at Disert, a medieval monastic settlement and ritual pilgrim landscape in Co. Donegal, Ireland. The month-long field school in July 2022 was part of a multi-year project facilitated by the Institute for Field Research (IFR) in conjunction with Atlantic Technological University, Sligo and California State University, Los Angeles.

This presentation examines the benefits and disadvantages of European field schools in preparation for a career in a US-based CRM company. The presenter specifically details many examples of ways in which field schools in Ireland and California are similar (i.e. interpersonal student dynamics, basic excavation methods), and how they differ (i.e. site recording techniques, terminologies, and the laws and regulations associated with heritage management). The presenter then considers concepts and suggestions that academic field schools in Europe can incorporate to best prepare students for a life-long career in commercial archaeology, while meeting the required research objectives and providing students with the academic archaeological experience they desire.

286 AGENT-BASED MODELLING FOR ARCHAEOLOGISTS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Rocks-Macqueen, Doug (Landward Research) - Visser, Ronald (Saxion | University of Applied Sciences) - van der Knaap, Laura - Lambers, Karsten (Leiden University)

Session format: Workshop

In the last few years simulation approaches, such as agent-based modelling, have become increasingly popular among archaeologists. The aim of this workshop is to provide an introduction to agent-based modelling for archaeologists who have no previous experience in building archaeological simulations. Participants will finish the workshop with an understanding of agent-based modelling methods and the essential functionality of NetLogo.

The workshop will focus on explaining the process of developing a simulation as well as provide a practical hands-on introduction to NetLogo - an open-source platform for building agent-based models. NetLogo's user-friendly interface, simple coding language and a vast library of model examples make it an ideal starting point for entry-level modellers, as well as a useful prototyping tool for more experienced programmers. The first part of the workshop will be devoted to demonstrating the basics of modelling with NetLogo through newly developed open educational resources. These are guided tutorials that will take you through the NetLogo software and show you how to model with it, developed as part of the Erasmus+ project - Agent-Based Modelling for Archaeologists.

This introduction will give each participant enough skills and confidence to tackle the second exercise of the day: building an archaeologically-inspired simulation in a small group. Here we follow the popular concept of a "Hack-a-Thon" where participants aim to code a problem in small groups. The aim is for participants to work together to solve an archaeological problem. In this way, participants will walk away from the workshop with a piece of working code that they can use in future research.

No previous coding experience is necessary. Please bring your laptop along and install NetLogo beforehand: <https://ccl.northwestern.edu/netlogo/download.shtml>

NEW PERSPECTIVES ON CHILDHOOD ARCHAEOLOGY PAST, PRESENT AND FUTURE: PAPERS IN HONOUR OF GRETE LILLEHAMMER

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Ardren, Traci (University of Miami) - Lewis, Carenza (University of Lincoln)

Session format: Regular session

Few scholars have contributed as much to the development of the interdisciplinary field of Childhood Studies, and for as long a period of time, as Norwegian archaeologist Grete Lillehammer. From her early foundational article “A Child is Born: The Child’s World in an Archaeological Perspective” published in 1989, to her 2018 publication “The History of the Archaeology of Childhood,” Grete has paved the way for archaeologists around the world to grapple with the culturally specific definitions and experiences of childhood. This session aims to pay honour to the prolific and inspirational career of a pioneer in the archaeological study of age-based identities. It includes papers on aspects of the archaeology of childhood that seek, like Grete’s work, to define and understand the child’s world in time, space and society, with a particular interest in new insights or approaches to this still-elusive subject, reflecting Grete’s interest in future arenas of investigation yet to be explored within the archaeology of childhood.

ABSTRACTS

1 FLIPPING THE SCRIPT ON FEMINIST SCHOLARSHIP: CELEBRATING GRETE LILLEHAMMER AND THE ARCHAEOLOGY OF CHILDHOOD

Abstract author(s): Baxter, Jane (DePaul University)

Abstract format: Oral

Many studies have demonstrated that archaeological scholarship produced by women is not cited as frequently as works produced by men. Feminist scholarship also has demonstrated that topics perceived to be feminine or associated primarily with women are often marginalized, and considered relatively unimportant in the broader field of archaeology. This paper does not argue against these views, because they are valid and empirically supported. This paper does ask that we all take a moment to “flip the script” and celebrate success; particularly the incredible growth, fluorescence, and scholarly acceptance of childhood as a significant and serious topic of archaeological scholarship. This success can be traced directly to the publication of Grete Lillehammer’s 1989, „The Child’s World.“ Childhood now enjoys a widespread acceptance in the field, is increasingly prominent in publications and on conference programs, and has been integrated into larger dialogs on migration, labor, health, craft production and situated learning, households, ritual, care, and emotion- to name a few. These successes stem from a very brave and original work from an important foremother in our field, and have been carried forward primarily by women’s scholarship. We should take time to reflect on this success, on the work of an extraordinary woman, and say thank you for the inspiration her scholarship has provided to so many.

2 LIVE AND LEARN - IN SEARCH OF THE PIONEER CHILDREN IN THE COASTAL AND MOUNTAIN LANDSCAPES OF SOUTHWESTERN NORWAY

Abstract author(s): Dugstad, Sigrid (University of Stavanger)

Abstract format: Oral

Studies of skill transmission in lithic technology is important when trying to identify children in the archaeological record. In this paper, the results from a study of lithics from mountain and coastal sites in southwestern Norway will be presented. What can lithic analysis tell us about technological strategies, social organization, and hunter-gatherer childhoods? In Early Mesolithic Norway people were predominantly coastal hunter-gatherers. However, settlement sites in the mountains also provides evidence of seasonal exploitation of mountain resources. Researchers have for many years discussed who travelled to the mountain sites. Some have argued for the whole group (family group) while others have claimed that only task groups (a few adult males) visited the mountain region. This problem will be addressed from a technological perspective, and skill is used as an indicator to discuss site demography. Knowledge about lithic technology becomes especially important when evidence from organic material of any kind is lacking, as it is in Norway. An important aim is thus to demonstrate the potential in assessing the entire lithic material - what do this really consist of and why, and are there differences between coastal and mountain sites? Analysis of raw material strategies and individual sequences are considered essential keys to achieve a better understanding of activities, relationships, and the character of the social groups.

3 **GROWING UP IN LITTLE ICE AGE GREENLAND-THE CONTRASTING ROLES OF NORSE AND THULE CHILDREN IN ADAPTING TO CHANGING CLIMATES**

Abstract author(s): Vestergaard Meyer, Mathilde (Aarhus University)

Abstract format: Oral

Medieval Greenland (10th to 16th centuries) is an iconic case of one society – the agricultural and entrepreneurial Norse – failing while another – the foraging Thule Inuit – thriving under conditions of adverse climate change. What role did children play in these societies, and what does it mean growing up under conditions that likely were not only radically different socially but also changed dramatically over time? Living in Greenland during the second millennium CE entailed demanding adaptations to the long, cold winters and short, cool summers. The material culture of the Thule culture that entered Greenland in the 12th century is characterized by diversity and innovativeness, including a wide range of miniatures intended for children. Vivaly, Inuit youngsters needed to acquire technological expertise, mostly through observation and experimentation; both ethnographic and archaeological evidence paints a picture of independent and playful learning, for which the many miniatures they were provided with served as essential scaffolds. Thus, toys played a big part in Inuit children's lives – they were essential trappings in their ontogenetic niche. Norse children, in contrast, appear to have used a much more restricted range of toys, reflecting more normative and perhaps less playful childhoods. Notably, these toys are mostly limited to the agricultural niche the Norse brought with them from Iceland, and with competition. Furthermore, they show little change over time. Placed within a framework inspired by so-called niche construction theory and using methods that make visible the cognitive demands and processes related to toys (chaîne opératoire /cognigrammetry), I show how growing up differently has implications for being in the world differently, and how this helps us in understanding how these societies adapted – or failed to adapt – to the climatic changes of the Little Ice Age.

4 **FORAGING FOR FUN: ANSWERING LILLEHAMMER'S CALL TO EXPLORE THE SPATIAL WORLD OF CHILDHOOD**

Abstract author(s): Ardren, Traci (University of Miami)

Abstract format: Oral

Not every culture identifies and defines childhood as a unique identity with its own spatial dimension. Grete Lillehammer pushed archaeologists to critically investigate the evolution of a separate 'child's world', a specific period in the life cycle but also a unique time, space, and place (Lillehammer 1989, 2015). In some cultures distinct spaces that reinforce and create the identity of child are plentiful, while in others they are absent. How does the spatial dimension create "the child"? Children can be more or less isolated from adults and adult activities, the spaces in which they operate delineated as child-centric or without any indication of child-based identities. Archaeologists can measure "the separated or joined worlds of children and adults" but we have shied away from seeking evidence for childhood in cultures where children were unmarked as a distinct category of personhood.

Ethnographic studies of hunter-gatherer-forager societies have shown that while "children" is a key concept people use in relation to human and non-human relationships with the natural world, "adult" and "child" are not separate or distinct categories of being. H-G-F societies typically have a greater number of child care providers per child than state level societies, and perhaps collective child-rearing blurs the boundaries between child and adult spaces, at least to modern Western eyes. Multi-aged child groups are more common in H-G-F societies which suggests rather less segregation of children into age grades and thus into discrete identity groups. In such cultures play, work, and socialization blend together and people of all ages contribute to food provisioning. With these observations in mind, this paper concludes with examination of where children can be found in the H-G-F societies of pre-Columbian Florida, where evidence of a separate child's world has yet to be found in the material record.

5 **FOREVER IN THE HOME, FOREVER WITH THE FAMILY: AN ANALYSIS OF CHILD BURIALS WITHIN SETTLEMENTS AND HOMES IN EGYPT**

Abstract author(s): Crawford, Courtney (American University in Cairo)

Abstract format: Oral

During the First Intermediate Period and the Middle Kingdom, many children were buried inside homes or near settlement structures. Although this tradition has been noted by several scholars, Petrie, Wegner, von Pilgrim, Gobeil, and Picardio, the topic has yet to be properly analyzed. Child burials were found within homes and settlements at the following sites: Lahun, Wah-sut, Ballas, Tell el Daba'a/Avaris, 'Ain Asil, and Elephantine. There has also been ethnographic research describing similar practices in Egypt until modern times. In the 1920s, Blackman recorded women burying fetuses and newborns within the walls of their homes in order to keep the child with the family, even after death. Although the 1920s happened 100 years ago, recent research has shown this tradition still continues in small villages in Upper Egypt. Women said that even if a child does not reach full term, they are still considered members

of the family that should remain within the home. In spite of the fact that house burials from ancient Egypt into modern times cover a 4,000-year span, understanding why women bury fetuses and newborns inside of homes can help provide context to the ideas and practices of people in ancient Egypt. The combination of archaeological studies of ancient Egypt and modern ethnographic research can illuminate ideas behind funerary practices and highlight the continuation from the past into the present. This research also emphasizes the importance of children in Egyptian culture, both past, and present.

6 THE STORIES WE TELL: CHILDREN, ORAL STORYTELLING, AND KNOWLEDGE TRANSMISSION IN THE EUROPEAN UPPER PALEOLITHIC

Abstract author(s): Nowell, April (University of Victoria)

Abstract format: Oral

In her seminal 1989 article 'A Child is Born', Grete Lillehammer identifies three important child-centered relationships – a child's relationship to the environment, to adults and to other children. She argues that these relationships are related to core concepts in archaeology such as adaptation, intergenerational knowledge transmission and enculturation and can be studied through traditional methods in our field. In this paper, I consider the layered relationships of children in deep time through an analysis of storytelling. Storytelling, whether around a campfire, in a café or a sold out theater, is ubiquitous in human culture. The universality of storytelling suggests that this behavior has deep roots. It also begs the questions of why we as humans find stories so compelling and what the evolutionary context for this behavior might be. The ways in which children learn in foraging societies differ from the classroom-based style of learning and teaching typical of industrialized societies in the West. This difference, however, has often been mischaracterized by anthropologists as an absence or rarity of direct teaching in foraging societies. In this talk, following the work of Scalise Sugiyama, I argue that oral storytelling is a form of pedagogy in foraging societies that shares many of the features of direct teaching. Building on ethnographic data, I explore the evolutionary context, adaptive features and cognitive underpinnings of storytelling. I then present archaeological evidence for storytelling and narrative in the Upper Paleolithic. Finally, arguing that storytelling is a vehicle for cumulative culture, I consider the implications of this form of teaching for skill acquisition and knowledge transmission among Upper Paleolithic children and adolescents and for their role as drivers of human cultural evolution.

7 THE ARCHAEOLOGY OF CHILDHOOD IN PRE-ROMAN ITALY (1ST MILLENNIUM BC): A NEW RESEARCH PERSPECTIVE

Abstract author(s): Govi, Elisabetta (Alma Mater Studiorum University of Bologna)

Abstract format: Oral

As G. Lillehammer pointed out (Lillehammer 2010), the archaeology of childhood needs a specific focus on material evidence, in order to trace the faint presence of children. During the 1st millennium BC, Italy is a mosaic of peoples and cultures and in this context, the archaeology of childhood has never been investigated systematically and through a comparative analysis. To fill the knowledge gap, the multidisciplinary project BIRTH (Burial Infant Ritual THeme) aims to record child burials in Etruria and Italy reconstructing a broad and detailed database. The research interests subadults in all its manifestations (funerary archaeology, inhabited areas, sanctuaries). The first concrete result is the open access publication (E. Govi (ed.), BIRTH. Archeologia dell'infanzia nell'Italia preoromana, Bologna 2021) and the BIRTH website (available on 2023).

This contribution displays the main considerations on the phenomenon, considering both methodological and cultural aspects. Besides focusing on different areas and displaying a rigorous contextual approach, the study investigates which parameters had shown to be useful for recognizing children, especially in funerary archaeology. Important considerations concern the access to formal burial, the definition of the different age groups, and the significant thresholds in funeral treatment. Strong discrimination emerges for perinatal and children within one year of age. Spatial analysis reveals the relationship between children and adults. The enormous amount of data now available allow us to assess the child's social and cultural value within the various communities of Pre-roman Italy.

8 CHILDHOOD THROUGH IMAGES AND CONTEXTS IN PRE-ROMAN ITALY

Abstract author(s): Pizzirani, Chiara (Alma Mater Studiorum Università di Bologna)

Abstract format: Oral

Iconography has always been an outstanding instrument for the discovery and interpretation of childhood in Classical Antiquity. Moreover, relating to classical archaeology, it could be stated that the study of children itself began thanks to iconographical research on classical art (Klein 1932).

Although images can often consist of a “visual construction”, instead of faithful photographs of the ancient reality, nonetheless the wealth of themes, details and meanings are an absolutely crucial source of information to improve our knowledge of children in classical times.

By this point of view, focusing on Pre-Roman Italy is particularly relevant, because among Etruscans and Italic peoples several myths, literary and epigraphic sources show the importance given to babies and children.

Nevertheless, child representation is certainly produced by adults, expressing their perception of childhood, the articulation of age categories, and consequently their treatment and position within society.

In conclusion, the ongoing research aim to investigate both the “children = biology” perspective and the “childhood = social” perspective, as G. Lillehammer stated in 2015. Images are a valuable tool and Pre-Roman Italy a notable historical context to reach the target in classical times.

9 INEXPERIENCED KNAPPERS, BUT NOT WANDERING AROUND

Abstract author(s): Gomes de Almeida, Miguel (Dryas / Octopetala; Morph, Lda.; Uniarq / FLUL - Faculdade de Letras da Universidade de Lisboa) - Aubry, Thierry (FCP - Fundação Côa Parque) - Walter, Bertrand - Peyrouse, Jean-Baptiste (SERAP Vallée de la Claise)

Abstract format: Oral

Located near a permanent stream, at the base of a smooth slope, directly over Turonian deposits delivering excellent flint nodules, the Maîtreaux archaeological site (Indre-et-Loire, France) shows a series of exceptionally well preserved Solutrean occupation levels characterized by the abundance of lithic remains derived from systematic production of shouldered points, backed bladelet blanks and large bifacial laurel leaves, all to be exported from the site either as preforms or finished tool elements.

The multidisciplinary study of the site produced an image of consecutive, seemingly short, stays of relatively small groups, mostly composed of experienced knappers coming to the site to explore the local flint sources and produce reserves of specialized lithic tools.

Nonetheless, a small portion of the refitted lithic operative chains undoubtedly testifies the presence of less competent knappers (moreover showing very diverse technicity levels, conceptual knowledge, experience, access to proper knapping tools, and specific patterns of intra-site spatial distribution), thus complicating the “experienced knappers party” picture.

If any direct interpretation of technological evidence of insufficient knowledge or knapping experience as the “work” of children or juveniles should be ruled out as oversimplifying, at Les Maîtreaux, it is the combined analysis of technological, raw-material, and spatial data that can shed light on the on-site actions of these inexperienced knappers and help understand their role in the group and their presence at Maîtreaux.

10 „LOST” CHILDHOOD OF LITTLE ONES IN PROTOHISTORY IN THE SOUTHERN CARPATHIAN BASIN

Abstract author(s): Ložnjak Dizdar, Daria (Institute of Archaeology) - Rajić Šikanjić, Petra (Institute for Anthropological Research)

Abstract format: Oral

The study of childhood in protohistory in the southern Carpathian Basin within the CSF ARHKIDS project has identified many material traces of children in settlements, cemeteries, and hoards. Any analysis of direct evidence of children and their relationship with the environment and the world of adults is limited by the state of preservation of material traces and reliable child-related contexts. The narrative on childhood in the southern Carpathian Basin grows from cremated anthropological remains, numerous miniature and small-volume objects found in child-related contexts, and hard-to-read traces of children in settlements and of their everyday work and contribution to the community. In our interdisciplinary research, we run into many obstacles and dead ends (e.g. children’s health from cremated anthropological remains, settlement areas where children lived and played, small objects such as toys (?), mortuary practices), but we try to recognize them within the childhood research process together with all the challenges repeatedly pointed out by G. Lillehammer from the perspective of childhood archaeology studies (1989, 2010, 2015). We respond to challenges within the possibilities offered by archaeological material traces in the analyses of age, diet, health, death, funerals, identity, play, learning, and rituals.

11 CHILDHOOD AND MEMORY IN THE YUCATAN PENINSULA: A DIACHRONIC APPROACH

Abstract author(s): Fernández-Souza, Lilia (Autonomous University of Yucatan)

Abstract format: Oral

Since Grete Lillehammer's seminal 1989 article, 'A child is born. The child's world in an archaeological perspective', children and childhood have gained an important place in archaeological studies. In this paper, I explore one of the central points suggested by Lillehammer to approach the child's world: childhood as a common experience between children and adults, and the way it is linked to memory. I am interested in how infancy is remembered, commemorated, or celebrated, both by the relatives of a dead child and by the adult who reminisces, recreates, or reinterprets the child he or she was in the past. By using a diachronic approach, the paper will focus on the Yucatan Peninsula, a region occupied by the ancient Maya in Pre-Columbian times, and conquered by Spaniards in the sixteenth century. I propose to understand, on the one hand, how children's agency, gender and performance were manifested in recognizable artifacts such as toys and learning objects or in non-material acts as rituals or games. On the other hand, I will explore how adults expressed their memories, sense of loss or nostalgia, love, and affection for their dead or grown-up children through patterns of burials, offerings, monuments, and representations.

12 ABORIGINAL CHILDHOOD: THE TALE OF THE CHILDREN WHO COULDN'T GROW UP

Abstract author(s): Rodríguez-Caraballo, Selene (University of La Laguna)

Abstract format: Oral

The aboriginal child population from Canary Islands has occupied a shady place in the archaeological investigation of the archipelago until now. For this reason, childhood should be understood as a historical agent deserving of its own historiographical discourse, as proposed by the Archaeology of Childhood. The child presence in different sites in Tenerife and La Gomera evidences their presence in the Guanche communities over time. Methodologically, it will be considered the specificities of the study of subadult osteological material, due to the very conditions of fragility and conservation. But it is also intended to address the documentary sources that we have for the study of the ancient populations of the archipelago: the chronicles about the conquest. Thus, it is intended to interpret the presence of some subadult individuals in different archaeological sites in Canary Islands in relation to various aboriginal contexts on the island to understand in depth the pre-Hispanic childhood.

13 BECOMING: A LIFE COURSE AND INTER-GENERATIONAL APPROACH TO INFANCY IN THE PAST

Abstract author(s): Gowland, Rebecca (Durham University)

Abstract format: Oral

Feminist archaeology has been pivotal for foregrounding topics such as childhood, infancy and reproduction in studies of the past. Scholars such as Grete Lillehammer have played a pivotal role in showcasing the varied perceptions and experiences of past infants and children as well as the importance of inter-generational relationships. This paper builds upon this seminal work through a synthesis and discussion of recent theoretical and methodological advances in the bioarchaeological study of infancy and the mother/infant nexus. The Developmental Origins of Health and Disease (DOHaD) hypothesis has highlighted the life-long and inter-generational significance of early life adversity for disease risk. DOHaD focuses on developmental plasticity during the first 1000 days of life (from the point of conception) and emphasises the centrality of infancy for overall population health. This work has implications for our interpretations of health in the past, including the need to consider this from a life course and inter-generational perspective. Furthermore, new biomolecular techniques are allowing archaeologists to obtain insights into maternal health via the analysis of infant bodies, providing hitherto unexplored links between generations. The maternal body has been characterised as both a 'buffer' and 'vector', 'protector' and 'threat' to the developing fetus, but her bodily resources and capacity is, in turn, the product of her own childhood and that of her recent predecessors. This study will draw upon the work of Karen Barad to conceptualise infant bodies as simultaneously coming from and 'becoming with' the social, material and biological world that both surrounds and pre-exists them.

A. SOME FUNERARY FEATURES OF CHILDREN'S ARCHAEOLOGY IN SOUTHERN MEDIEVAL ITALY

Abstract author(s): Bruno, Brunella - Diciano, Giuseppe (University of Salento)

Abstract format: Poster

Archaeology of Children focuses on many aspects of children's perception in the past. Thanks to Grete Lillehammer's studies, it was possible to explore different ways of approach to the subject. The approach used in this work regards the funerary world of children, a world too often considered secondary to adult's funerary world. Even though artifacts are not always identifiable as related to childhood or the body inside the tomb, it is possible to reconstruct the actions that have taken place during the burials. These actions differ for social structure or beliefs, but can guarantee data about age and importance of the deceased. Another factor is the place where these actions are made. It is not uncommon

to find exclusive burial areas for children or different treatment based on the age of the child, as we will see. It was difficult to analyze all the data, mostly because of the lack of studies about Children's Archaeology in Southern Italy. Medieval funerary contexts of Southern Italy show a lack of children's burials in archaeological record. Only few of these contexts show studies and systematic analyses of children's burials. Moreover, it is hard to study children's burials due to the rarity of materials associated with individuals for burials dated from Late Antiquity to Early Medieval Age. This work gives an overview of the data, rethinking the relation between children's and adult burials in burial areas and reconsidering the different aspects of the funerary world of children and children's material culture.

290 TRANSITIONS IN IRON AGE EUROPE: ENVIRONMENT AND FOODWAYS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Esposito, Carmen (Department of Cultural Heritage, University of Bologna; School of History, Archaeology and Religion, Cardiff University) - Madgwick, Richard - Dibble, Flint (School of History, Archaeology and Religion, Cardiff University)

Session format: Regular session

Significant changes in material culture, settlement patterns, political organization, and mobility of goods and people have been clearly evidenced across Europe in the first half of the first millennium BCE. Methodological advancements in environmental archaeology and food studies have made particularly important contributions in providing alternative perspectives to understand these changes and explore the diverse responses to these shifts in different populations. Traditionally material culture and settlement have dominated narratives, but it is clear that foodways, the agricultural economy and human-environment relations more broadly are at the very core of this transitional phase.

This session will examine how the study of environment and foodways can contribute to narratives of social transition in Iron Age Europe and the Mediterranean. From subsistence to feasting or climate change to settlement patterns, environment and food are topics that are ripe for comparison across periods and regions. We hope for a wide range of papers covering cultural transitions from the Bronze Age to the Iron Age or within the Iron Age of the first millennium BCE in any of the areas that encompass Europe or the greater Mediterranean (including North Africa and Southwest Asia). We encourage papers that employ a diverse set of methods and those that investigate topics of resilience or adaptation, social organization or networks, cuisine or diet, mobility or seasonality, and more.

ABSTRACTS

1 SAVOUR AND SIGNIFY: DEVELOPMENTS IN CUISINE AND IDENTITY FORMATION IN IRON AGE BRITAIN

Abstract author(s): Enayat, Misha (Independent researcher)

Abstract format: Oral

Southeast England witnessed rapid social, cultural, economic and political change between the Middle and Late Iron Age, with the emergence of novel forms of mortuary rites, settlement types, hierarchical organisation and material culture. Against this precarious and dynamic backdrop, the archaeological record indicates significant developments in foodways, consumption habits, eating- and drinking-related material culture, and social and political uses of food and drink. Elite cuisine in particular changed dramatically following the introduction of imported foodstuffs, tablewares and novel eating practices. While many of the emerging traditions may have had parallels across the Channel, however, the forms they took on post-adoption were often distinctly British.

This paper will present a discussion of these culinary developments based on a synthetic assessment of the archaeobotanical, archaeozoological, ceramic and small finds data from published and unpublished excavation reports from across southeast England. More specifically, it will discuss how conspicuous consumption during this period transitioned from a model of competition in the Middle Iron Age to one of exclusivity by the Late Iron Age, and argues that the emergence of an haute cuisine culinary culture and table etiquette begin to become archaeologically recognisable during the latter period. Finally, taking Late Iron Age Britain as an example of a colonial frontier, the paper will explore how indigenous Britons responded to the rapidly changing socio-political landscape by using food and dining to fashion and express complex 'hybridised' frontier identities, most visible in the burial record of the period.

2 FEASTING NETWORKS AT THE BRONZE AGE-IRON AGE TRANSITION IN SOUTHERN BRITAIN: EXPLORING MOBILITY AND ANIMAL MANAGEMENT

Abstract author(s): Madgwick, Richard (School of History, Archaeology and Religion, Cardiff University) - Esposito, Carmen (The British School at Rome; University of Bologna) - Lamb, Angela (NEIF, British Geological Survey)

Abstract format: Oral

The Late Bronze Age and Early Iron Age (c. 800-400BCE) saw the rise of a new site type in southern Britain, commonly termed a midden. These vast monumental mounds, some comprising millions of artefacts/ecofacts dominated by animal bone and ceramics, signal a societal refocus towards agricultural intensification and communal feasting on a grand scale. These sites hint at the coming together of vast numbers of people and animals for feasts, potentially providing anchors for new networks after the breakdown of networks surrounding the production and trade of Bronze. In spite of the exceptional resource middens provide, they have been subject to relatively limited scientific study. Major questions remain surrounding the scale and nature of these networks, whether local, regional or wider and also about the strategies employed to enhance agricultural productivity at a time of climatic deterioration.

The FeastNet project (funded by the UK Arts and Humanities Research Council) is attempting to address these questions through a programme of multi-isotope analysis on fauna from two major regions of midden accumulation: the Vale of Pewsey and the Thames Valley. This paper presents data from six sites: East Chisenbury, Potterne, All Cannings Cross and Stanton St. Bernard in Wiltshire and Runnymede and Wallingford in the Thames Valley. The programme of strontium, oxygen, sulphur, carbon and nitrogen analysis demonstrates different site catchments and variable husbandry regimes across both sites and species. These data provide new insights on the problematic issue of how the economy and patterns of connectivity changed during this transitional phase.

3 FOOD STORAGE AND SECURITY IN BRONZE AGE IRELAND

Abstract author(s): Johnston, Penny - McClatchie, Meriel (School of Archaeology, University College Dublin) - Cleary, Kerri (Archaeological Consultancy Services Unit) - Doyle, Clodagh (National Museum of Ireland)

Abstract format: Oral

Intensification of agricultural production is evident in Bronze Age Ireland, however, little attention has been paid to issues such as food surplus, storage and security that underpinned this intensification. These had important implications for those who controlled the means of production and distribution of produce. Food security has a crucial role to play in our understanding of the social organisation of the period, and of the transition into the Iron Age.

This paper will present interim results from a two-year project (FOODSEC) which aims to provide a new scientific basis to understand how past societies managed food security. The project focuses on data from Ireland, where excavations during the past three decades have revealed evidence of extensive Bronze Age settlement with a high standard of associated agricultural data. We will present collated evidence for food remains (plant and animal) and food storage facilities (containers, storage pits and above-ground structures) from selected archaeological sites. These results will be integrated with the evidence for traditional methods of food storage that comes from Ireland's extensive collections of folklife/ethnographic material.

Ireland has sometimes been regarded as a marginal zone when compared to other areas of prehistoric Europe. As well as providing new insights into the evidence from Ireland, the innovative, multi-strand approaches taken in FOODSEC complements work on food security carried out in other areas of Europe. We hope that this will encourage more comprehensive integration of the evidence from Ireland into discussions of European food surplus, storage and security in the future.

4 DEVELOPMENT OF FOODWAYS DURING THE LATE BRONZE AGE - IRON AGE TRANSITION IN THE EASTERN BALTIC REGION

Abstract author(s): Micelicaite, Viktorija - Podėnas, Vytenis (Lithuanian Institute of History) - Vėlius, Gintautas (Vilnius University) - Vengalis, Rokas (Lithuanian Institute of History)

Abstract format: Oral

The most significant dietary changes of the Eastern Baltic population followed the emergence of animal husbandry during the third millennium BC and the adoption of crop cultivation ca. 1400-1200 cal BC. At first, some inhabitants moved from a diet based on freshwater sources to mixed sources with the significant intake of terrestrial animals. From the first millennium BC, the role of fishing diminished significantly as local communities intensified their farming. However, these changes have not been uniform and the intraregional variety of subsistence economy developed during the transition to Iron Age. In this paper, we aim to review the evidence on local diet from the first millennium BC and early first millennium AD and discuss how the development of iron technology corresponded to the foodways of the local population. As the Neolithisation of the economy has happened significantly later than in the Western Baltic region or Central Europe, the Eastern Baltic region presents an intriguing case of social transition.

Based on the latest zooarchaeological and stable isotope studies, a significant dietary change could be inferred from the 1000 cal BC. Moreover, the consumption of millet seems to be of higher significance only during a short period of the Late Bronze Age. Lastly, data from eastern and western Lithuania indicate a separate development of culinary and consumption traditions.

5 **BON APPÉTIT! FEASTING IN LATE BRONZE AGE FRANCE**

Abstract author(s): Peake, Rebecca (INRAP - National Institute for Preventive Archaeological Research)

Abstract format: Oral

The excavation by Inrap of the Villiers-sur-Seine site „le Gros Buisson“, a Late Bronze Age settlement dating to the 9th century B.C., provides the main focus of this study that sheds new light on foodways in domestic contexts of this pivotal period. Villiers-sur-Seine is located in the Upper Seine Valley to the south-east of the Paris Basin where Bronze Age and Early Iron Age sites are numerous. It is a fortified settlement with an organised plan, abundant finds, in particular animal bone that points to the massive consumption of young pigs and game (red deer and boar) that probably occurred during collective feasting. The data reveal that these commensal events were probably seasonal, taking place regularly over a relatively short period, probably equating to less than a hundred years. In this paper, we aim to place Villiers-sur-Seine within the wider context of contemporary LBA settlements of the Seine Valley with the aim of understanding the socio-political organisation of the area and the role played by high status sites and feasting during this period.

6 **BRINGING WATER TO THE SEELAND: THE TRANSITION FROM THE BRONZE TO THE IRON AGE IN THE SEELAND REGION, BERNE**

Abstract author(s): Geitlinger, Timo - Blum, Jonas (University of Zurich) - Winkler, Alexandra - Ramstein, Marianne (Archaeological Service of the Canton of Berne) - Della Casa, Philippe (University of Zurich)

Abstract format: Oral

The «Seeland» (See = German for Lake) is a micro-region in western Switzerland, encompassing the area between lake Neuchâtel, lake Morat, and lake Bièvre. It is subject to the interdisciplinary research project “ArchSeeland” conducted by the University of Zurich in cooperation with the Archaeological Service of the Canton of Berne.

The Seeland is situated at the northern foot of the Jura Mountains and consists of distinct hills and flat plains. As the name suggests, rivers, lakes, and bogs are the most dominant topographical features of the Seeland. Furthermore, water also appears to be key for the understanding of the transition of the Late Bronze Age to the Early Iron Age.

With a few exceptions, the best evidence for Late Bronze Age settlements is found at lakeshores. Due to waterlogged preservation, the region is particularly rich in Late Bronze Age structural wooden remains. Especially the results of the dendroarchaeological analysis presented within this paper paint a vivid portrait of the conscious economic behaviour, use of resources, landscape modifications, and settlement organisation of Late Bronze Age societies.

While material culture and burial locations point towards a continuous transition between the Bronze Age and the Iron Age in the Seeland, the greater abundance of rich burials and changes in the location of settlements are evident. In the Early Iron Age, settlement remains are almost entirely lacking and often occur on hills. Although climatic changes at around 800 BCE likely induced sea level fluctuations, water kept its importance for the Early Iron Age inhabitants of the Seeland. GIS-based modellings show the importance of water as transportation route within the Seeland. It possibly also shaped the outlines of local territories. Additionally, depositions emphasise the newly occurring importance of water as ritual space.

7 **INTERROGATING THE FOOD AND ENVIRONMENT TRANSITION FROM THE LATE SECOND MILLENNIUM TO THE MID FIRST MILLENNIUM IN CENTRAL ITALY**

Abstract author(s): Stoddart, Simon - Zeviani, Camilla - Schmidt, Frijda (University of Cambridge) - Prato, Ornella (University College, London) - Trentacoste, Angela (University of Kiel) - Magnini, Luigi (University of Sassari) - McLaughlin, Rowan (National University of Maynooth) - Gaveriaux, Fanny (Independent) - Bagnasco, Giovanna - Marzullo, Matilde (University of Milan)

Abstract format: Oral

The transition at the end of the second millennium/beginning of the first millennium BC in central Italy has been well measured in terms of settlement change from villages to nucleated centres and, in the course of the first millennium BC, the development of frontiers around the new metropolises. Less attention has been paid to the impact that these social and political changes had on food production and the environment.

This paper will examine the implications of these changes (enhanced by simulation of settlement densities and distribution in unresearched areas (Magnini) by modelling Land Utilisation Types for a number of sample areas in the

territories of Murlo, Tarquinia and Cerveteri (Zeviani) and setting these against the available evidence from archaeological remains (Gaveriaux, Schmidt, Trentacoste and Prato), isotopic research (Gaveriaux and Trentacoste) and environmental impact from erosion and land use from pollen (Stoddart). The detailed sample areas will be contextualized within a broader model of spatially defined political change generated from the permanent powerful places of the landscape (Stoddart).

The overall result will be an understanding of the political economy that underwrote the impressive visual culture of the Etruscans, a theme that has dominated previous research.

8 TULAR: TRANSCULTURALITY AND SOCIAL INNOVATION IN VILLANOVAN AREAS OF PRE-ROMAN ITALY

Abstract author(s): Esposito, Carmen (Department of Cultural Heritage, University of Bologna; British School at Rome) - Bondioli, Luca (Department of Cultural Heritage, University of Bologna; Department of Cultural Heritage, University of Padua) - Coppa, Alfredo (Department of Environmental Biology, Sapienza University of Rome) - Sperduti, Alessandra (Bioarchaeology Service, Museum of Civilizations) - Madgwick, Richard (School of History, Archaeology and Religion, Cardiff University) - Müller, Wolfgang (Institute of Geosciences, Goethe University Frankfurt; Frankfurt Isotope and Element Research Center - FIERCE, Goethe University Frankfurt) - Trucco, Flavia (Independent scholar) - Lugli, Federico (Department of Cultural Heritage, University of Bologna; Department of Chemical and Geological Sciences, University of Modena and Reggio Emilia) - Stoddart, Simon (Department of Archaeology, University of Cambridge) - Benazzi, Stefano (Department of Cultural Heritage, University of Bologna)

Abstract format: Oral

Transitions in societies are caused by various factors; among those, human connectivity can have a crucial role. The early first millennium BCE of central Italy was marked by significant geopolitical changes involving extensive population nucleation, recognised as early forms of urbanisation. The archaeological record has traditionally hinted at large movements of people. Several studies have recently explored this transformation through multi-isotope and aDNA analysis of human and faunal remains in centres across the peninsula. The MSCA project TULAR (June 2023-June 2025) looks at human mobility and transculturality (the coexistence of diverse cultures) of Villanovan (also known as proto-Etruscan) sites of pre-Roman Italy, which experienced diverse outcomes in historical time, investigating their demographic, cultural and political dynamics. This multidisciplinary project will consist of the archaeological, osteological, isotope and aDNA analysis of some Villanovan sites across the peninsula, i.e. Pontecagnano, Sala Consilina (Campania region) and Vulci (Latium region), revising the traditional narrative of the Etruscan civilisation. This paper presents the first set of data from previous and ongoing research on human mobility from Tarquinia (9th century BCE; Latium) and Fermo (9th-5th century BCE; Marche) and discuss them in light of their archaeological contexts. Tarquinia was in Etruria and became one of the major Etruscan city-states in historical times. Fermo, a Villanovan enclave located in the Picene territory, did not have an urban phase, pointing to a completely different development. $^{87}\text{Sr}/^{86}\text{Sr}$ isotope results on human remains (cremated and inhumed) show a high proportion of non-local individuals in both necropolises. Mobility in Tarquinia is represented across the entire 9th century, while in Fermo the non-local individuals are found in the 9th-8th century BCE with no outliers later (7th-6th century BCE). Future works will help us to unravel these dynamics, providing a compelling reworking of our understanding of the European Iron Age.

9 THE GENOMICS OF AN IRON AGE SITE IN FERMO, MARCHE

Abstract author(s): Breslin, Emily (Trinity College Dublin) - Esposito, Carmen (The British School at Rome; The University of Bologna) - Mattiangeli, Valeria (Trinity College Dublin) - Miranda, Pasquale (Università degli Studi di Napoli Federico II) - Blaauw, Maarten - Reimer, Paula (Queen's University Belfast) - Bradley, Daniel (Trinity College Dublin)

Abstract format: Oral

The Villanovan, or proto-Etruscan, culture of early Iron Age Italy is key in the study of the processes of urbanisation and mobility in Italy. Genetic studies on Villanovan and Etruscan groups have so far focussed on sites within Etruria, and on individuals from more “typical” archaeological contexts. These ancient genomes revealed that the Villanovans and early Etruscans carry a genetic signature typical of Iron Age European populations, and that the origin of these groups appears to be autochthonous. In this study we present 19 new shotgun sequenced genomes from the Villanovan enclave of Fermo, Marche. Using ancient DNA and isotopic analysis we examine the connections between the population at Fermo and the contemporaneous populations of Etruria, and reveal a pattern of both group and individual mobility. We also examine the trajectory of these Iron Age populations to the present day, and how migration and changes in mobility have shaped the Italian peninsula since the Iron Age. Within Fermo itself we find evidence of extensive kinship networks, illuminating the underlying social structure of the settlement.

10

PUNIC FOODWAYS AT NORA (SARDINIA, ITALY): STABLE ISOTOPE ANALYSIS FOR THE STUDY OF ANCIENT DIET IN A PUNIC POPULATION

Abstract author(s): Ruberti, Noemi (Department of Cultural Heritage, University of Padua) - Madgwick, Richard (School of History, Archaeology and Religion, Cardiff University) - Esposito, Carmen (Department of Cultural Heritage, University of Bologna) - Nederbragt, Alexandra (School of Earth and Environmental Sciences, Cardiff University) - Mazzariol, Alessandro - Bonetto, Jacopo - Gigante, Melania (Department of Cultural Heritage, University of Padua)

Abstract format: Oral

Reconstructing past human foodways has long been challenging in Punic archaeology. Our knowledge derives mainly from indirect evidence such as written sources, material culture, and archaeozoological and archaeobotanical evidence. Scientific research employing human skeletal evidence to investigate nutritional patterns is still underrepresented.

Focusing on the Punic Sardinia, this research represents the first attempt to employ carbon ($\delta^{13}\text{C}$) and nitrogen ($\delta^{15}\text{N}$) isotope analysis of bone collagen to explore the diet of the population from the Punic cemetery of Nora. Located at the heart of the western Mediterranean Sea, ancient Nora was an ideal landing point for ships heading along Mediterranean routes, becoming an important commercial crossroads. Archaeological evidence from the Phoenician, Punic and Roman periods testify to a settlement life spanning over fifteen centuries (8th century BCE – 7th century CE).

The isotope research forms part of a wider project involving anthropological (osteobiographies, provenance and mobility, kinship and ancestry), environmental (pollens, macro and micro remain), and archaeological (material and immaterial culture) evidence. Bone and dentine collagen was extracted from 42 human samples (N = 29 individuals) from 7 collective tombs dated between the 7th and the 3rd century BCE. Both subadults (n = 13) and adults (n = 16) were sampled to highlight possible differences in social organization, food and primary resources access, and habits by age and/or sex; multiple elements (e.g. ribs and teeth) were sampled in some instances to investigate in-life dietary change. Further n = 15 faunal bone samples (*Ovis aries*; *Capra hircus*; *Bos taurus*; *Equus caballus*; *Cervus elaphus*, *Sus domesticus*; *Gallus gallus*; *Spaurus aurata*) characterized locally available food sources.

Coupling with demographic profile, funerary customs, and reconstruction of the local environment, these results provide information on human-environment relations at the site.

11

MOBILITY DYNAMICS AND MIXED FUNERARY RITUALS DURING THE TRANSITION TO URBANISM IN MIDDLE IRON AGE PADOVA: THE NECROPOLIS OF PIOVEGO

Abstract author(s): Capasso, Giusy (Department of Cultural Heritage, University of Padova) - Beck De Lotto, Michael Allen (Department of Cardiac, Thoracic, Vascular Sciences, and Public Health, University of Padua) - Lugli, Federico (Department of Cultural Heritage, University of Bologna) - Cipriani, Anna (Department of Chemical and Geological Science, University of Modena and Reggio Emilia) - Gallo, Veronica - Cupitò, Michele - Vidale, Massimo (Department of Cultural Heritage, University of Padova)

Abstract format: Oral

The Piovego necropolis (second half of the VI - first half of the IV century BCE) is crucial for understanding the socio-political transformations that invested Padova during the transition into a fully urban phase. Following the funerary codes of the Middle Iron Age Venetic ritual, the necropolis returned cremations (prevailing), inhumations, horse burials, and the grave of a man with a horse. Given the contrasting poverty of the inhumations' grave goods when compared to cremations and the evidence of 'anomalous burials' that suggest violent deaths for some of the inhumed individuals, the latter has been hypothesized to be foreigners and/or belong to a lower social status.

To highlight relationships between funerary rituals and possible mobility dynamics at the site, we performed a strontium isotope analysis sampling dental enamel from the first permanent molars for the inhumed individuals (n=22) and petrous bones for the cremated ones (n=40). $87\text{Sr}/86\text{Sr}$ ratios were determined through solution MC-ICPMS analyses. Due to the location of the necropolis in a modern urbanized area, we relied on the Italian Sr isoscape (<https://www.geochem.unimore.it/sr-isoscape-of-italy/>) and the shape of the human sample distribution to identify outliers (i.e. possible non-local individuals). Based on Tukey's outlier detecting method, the local baseline likely ranges between 0.7087 and 0.7103. This range matches with the distribution of the isoscape values within a ~10 km radius from the site.

Eleven individuals fall outside this baseline, with the percentage of non-locals among the inhumed (n=8, 36.4%) quintupling if compared to the cremated ones (n=3, 7.5%). Interestingly, three non-local inhumed individuals show skeletal evidence of violent trauma.

The differential prevalence of non-locals among the samples (Fisher's exact test $p=0.012$) and evidence of trauma in some non-local inhumed individuals, seem to support both the hypotheses of a different geographic origin and lower social status for the latter.

12 ANIMAL HUSBANDRY AND SOCIAL CHANGES IN THE BALEARIC PREHISTORY. RESULTS FROM ZOOARCHAEOLOGICAL MULTIPROXY ANALYSES FROM S'HOSPITALET VELL VILLAGE (MALLORCA, SPAIN)

Abstract author(s): Valenzuela-Suau, Lua (ArchaeoUIB Research Group, Universitat de les Illes Balears, Dpt. de Ciències Històriques i Teoria de les Arts; SERP Research Group, Secció de Prehistòria i Arqueologia, Departament d'Història i Arqueologia, Institut d'Arqueologia-UB, Facultat de Geografia i Història, Universitat de Barcelona) - Ramis, Damià (Independent researcher) - Pons, Guillem (Universitat de les Illes Balears. Dpt. de Geografia) - Rivals, Florent (ICREA; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Departament d'Història i Història de l'Art) - Pena, Leopoldo D. (Geociències Marines. Facultat de Ciències de la Terra, Universitat de Barcelona, Dpt. de Dinàmica de la Terra i de l'Oceà) - Salas, Magdalena (Museu d'Història de Manacor) - Valenzuela-Lamas, Sílvia (Archaeology of Social Dynamics - ASD, Consejo Superior de Investigaciones Científicas-Institució Milà i Fontanals - CSIC-IMF)

Abstract format: Oral

The Prehistory of the Balearic Islands shows a local and singular cultural dynamics, embedding elements of change and continuity from their early settlement in the 3rd millennium BC to the Roman conquest of Mallorca and Menorca in 123 BC. The Middle and Late Bronze Age of the Balearic Islands (ca. 1600-850 cal. BCE) is characterized by the appearance and apogee of the navetic culture. During this time period, people from the islands lived in open-air villages without defensive walls in most cases, and they had a mixed economy. During the Late Bronze and Iron Age period (ca. 1200-123 cal. BCE) the societies of the Balearic Islands were involved in complex socio-economical changes perceivable in the settlement scheme and the architecture (e.g. massive towers, sanctuaries, territorial marks, visibility between sites). In parallel, there is an increase in external contacts, that will be especially apparent during the Late Iron Age mostly due to Punic trade. In this sense, zooarchaeological studies allow us to provide information about how these social, economic, ideological and political evolution affected to animal husbandry, meat diet and the landscape.

In this communication these topics will be discussed with a multiproxy zooarchaeological analysis of the case study of S'Hospitalet Vell, in Mallorca. Located near the in the eastern coast of the island, this site had a long-term use that embraced the Bronze Iron Ages. After 20 years of uninterrupted excavations at the site, several bone assemblages belonging to different phases between ca. 1600 and 100 BC have been recovered and analysed. Results from NISP, strontium isotopes and microwear analyses from the two main periods (BA and IA) and from different types of buildings (i.e. houses and a communal structure) will be presented and contextualised with other Balearic sites.

13 SOCIAL STRUCTURE, DIETARY VARIATION AND MOBILITY IN EARLY IRON AGE, GREECE

Abstract author(s): Panagiotopoulou, Eleni (The Acropolis of Athens)

Abstract format: Oral

How can we interpret diversity observed in the burial practices? This is the main question dealing with, while studying the Early Iron Age (1100-900 BC) in Greece.

The aim of this paper is to shed light on that topic, by integrating the contextual analysis of the mortuary practices with the isotope analysis for diet reconstruction and the study of mobility.

The beginning of the Early Iron Age, the so-called Protogeometric Period, was characterised by social regression, but also by partial recovery and increased population mobility. The case study of Thessaly (central Greek mainland), which was affected by the decline and disintegration of the Mycenaean civilisation as the northern margin of the old Mycenaean world, is particularly interesting because it demonstrates intense variability in mortuary practices. Furthermore, diet, as is seen here, plays an important role in social life and it may reproduce social differentiation, while the coexistence of local and non-local individuals may likewise induce differentiation patterns. Therefore, the results from the isotope analysis were interpreted while compared with the results from the contextual analysis of mortuary practices and the osteological analysis of the skeletal assemblage.

Hence, this integrated approach explored the process of social formation and social change and provided a deeper understanding of social structure during this turbulent period.

14 TRADE, FOOD SUPPLY AND CULTIVATION STRATEGIES IN ATTICA DURING THE FIRST MILLENNIUM BCE: AN INTEGRATIVE APPROACH

Abstract author(s): Bonnier, Anton (Uppsala university)

Abstract format: Oral

Past research on the ancient Athenian agricultural economy has largely been focused on the productive capacity of the rural hinterland (Attica), and the ability of the hinterland to feed the city and the need to import foreign grain. Such studies have primarily utilised fragmentary evidence from written sources together with agricultural yields in more recent periods to examine the agricultural economy of Attica, building on the assumption that land use strategies were more or less static. New paleoenvironmental data and spatial analyses of archaeological legacy data can, however, provide new avenues to explore agricultural land use in Attica and changes occurring over time. Through an integrative approach we can engage in a discussion on the way in which trade and changes in the pattern of food supply impacted cultivation strategies and land use over time. Pollen records from multiple Attic locations are analysed in connection with potential agricultural surfaces, defined in a GIS environment. The spatial and diachronic data relating to ancient land use is further discussed in light of evidence for trade and food supply stemming from written sources. The study will highlight the potential of integrating cultural and paleoenvironmental data sources in our understanding of dialectics between trade patterns, food supply and land use dynamics around large urban sites in the ancient Mediterranean.

15 THE ZOOARCHAEOLOGY OF ANCIENT CRETE. BONES, ISOTOPES, PEOPLE, AND ENVIRONMENT

Abstract author(s): Dibble, Flint - Madgwick, Richard (Cardiff University)

Abstract format: Oral

While the iconographic and textual evidence for animals in the historical Greek world is well-trodden, the evidence from animal bones and biomolecular evidence from animal teeth on the island of Crete provide a new perspective on animals and humans in the first millennium BCE. After the end of the Bronze Age, the faunal record suggests a shift away from sheep to goat management in eastern Crete, likely as an adaptation to a drying climate in the drier regions of the island. This taxonomic shift in the zooarchaeological record is complemented by evidence for various animal management strategies evident from sequential isotope analysis: pasturing, foddering, and seasonal mobility are all evident. These various strategies relate to the management of animals consumed both in houses and in larger civic feasts, and they provide new detail to the socioeconomy of city-states that develop across the island in the Archaic, Classical, and Hellenistic periods.

294 BUILDING MATERIALS AND CONSTRUCTION TECHNIQUES IN ANTIQUITY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Negru, Mircea (Spiru Haret University; University of Craiova) - Klenina, Elena (Adam Mickiewicz University Poznań)

Session format: Regular session

Building materials are a subject seldom addressed in modern research, although all structures are made of them. For various reasons related to their banality, number and prevalence of forms, scholars are less interested in them and mention them only in passing.

Our session aims to deepen our knowledge of the history of construction. The purpose of the session is to improve the general awareness of the materials used in buildings from various historical periods discovered during archaeological exploration.

Several key questions will shape the contributions to this session: Which building materials were used in Ancient times? What interdisciplinary methods have been successfully involved in the research of building materials and techniques? Which type of interdisciplinary collaboration provides the best way to study building materials? By addressing these questions, this session will contribute to the study of building materials, ancient construction techniques, etc.

In this session, we would like to explore the use of different building materials such as wood, stone and mud used in the construction of roofs, of wheat straw and reed for thatches, as well as wood and tiles. All these materials, which rarely appear in archaeological research reports, have many properties that made them useful over time for the design of houses, fortifications, infrastructure works, tombs etc. The choice of building materials depended on many factors: traditions, fashion, climate and the resources offered by the environment of the respective era.

This session will be the starting point for a further systematic interdisciplinary approach to the study of building materials. In the future, it will be possible to develop more specialized sessions for different categories and historical periods. There is considerable potential for interdisciplinary research involving physicists, chemists, biologists, architects and other specialists.

1 BUILDING IDALION: AN ARCHAEOMETRIC STUDY OF PLASTERS USED IN VARIOUS ARCHITECTURAL STRUCTURES IN THE ANCIENT CITY-KINGDOM OF IDALION

Abstract author(s): Kalofonou, Myrto - Hadjipanteli, Savvina (University of Cyprus)

Abstract format: Oral

The city of Idalion was an ancient city-kingdom during the Classical Period of Cyprus (475B.C.- 310B.C.). The city-kingdom is located inland near the modern village of Dali, 25km from the modern capital of the island, Nicosia. In the archaeological site of Idalion, several structures with different functions (administrative rooms, production sites, storage rooms) have been excavated. These architectural complexes were built with a variety of lime and gypsum plasters and mortars. With the use of different archaeometric techniques, we can identify the physio-chemical characteristics of these building materials. Plasters and mortars have played a great role as building materials during all periods of Antiquity and recent history and their study can give a good insight into the technology that was used during different chronological periods. The plasters studied in this research are roof, floor, and wall plasters, plasters from water cisterns/reservoirs, and plasters from a cistern used in olive oil production. Using macroscopic observations, petrographic analysis (optical microscopy), mineralogical analysis with X-ray Diffraction analysis (XRD), Thermal Analysis (DTA-TG), and other archaeometric techniques we can identify the different materials and recipes (binders, aggregates, additives), and building techniques (possible hydraulicity) that builders of that chronological period implemented for the construction of Idalion.

2 BUILDING IN PREHISTORIC SCOTLAND; A DIALOGUE BETWEEN PEOPLE AND PLACE

Abstract author(s): Barber, John (AOC Archaeology Group)

Abstract format: Oral

Structures in prehistoric Scotland are built with Hard-rock or Sedimentary-rock types. Hard rocks are predominantly volcanic or metamorphic rock types whilst the sedimentary rock types include sandstone and limestone deposits. Hard rock describes a hard, high density lithic usually breaking into angular masses that are not ideal building material. Sedimentary rock is softer, low density and usually cleaves along parallel planes to form tabular masses ideal for dry stone building. Structural forms and architectural detailing are constrained by the stone type of which they are built. We shall explore the regionality of chambered cairn types form whose spread is largely coterminous with the rock type used in their construction. Conversely, the broch towers are standardised structures. However, the hard rock brochs are uniformly 20% smaller than the sedimentary examples but their building costs are relatively invariant.

We argue that the creative tension between the materiality of construction and the design intent of the builders explains the difference in building response. The socially conditioned responses are driven by the physical properties of the basic material. Buildings arise in a dialogue between people and material and depending on the contingent circumstances one or other will lead the dialogue. The material strongly influences the outcomes in the Scottish Neolithic, while the social context, together with the novel form of the broch tower, severely constrains variation in the Middle Iron Age.

3 LATE ROMAN ROOF TILES FROM THE SOUTH-WESTERN CRIMEA: FORMS AND ORIGIN

Abstract author(s): Dmytro, Moisieiev (CO «Crimean institute of strategic studies»)

Abstract format: Oral

In the Late Roman period, despite minimizing relations between Roman Empire and Crimea, antique civilization expanded its cultural and technological influence on barbarian territories in mountainous and southern coastal regions of the peninsula. Up to this moment the barbarian population of these territories did not know neither production of ceramic building materials, neither the construction technologies of the Roman world.

Hitherto building ceramics, such as tegulae, laconian tiles, imbrices and plinth, were produced and applied only in Tauric Chersonesos. The production of laconian tiles in Chersonesos began only in the Late Roman time. Presumably, up to the 3-5 centuries laconian tiles, tegulae and imbrices were imported. Thus, the use of several roof tile traditions of the eastern part of the Roman Empire was spread in the region. Fundamental changes in roof tile traditions began in the 1st half of the 5th century with the import of flanged tiles (keramides) to Chersonesos. By the middle of the 6th century flanged tiles are already known on the barbarian territory in the Mountainous Crimea (Mangup). The region of origin of these flanged tiles is unknown, however tiles with similar fabric were produced in this period in Paphlagonia.

In addition, in the 2nd half of the 5th century the producing of tegulae and imbrices started on the barbarian territory of the peninsula (workshop Bodrak). Around the middle of the 6th century barbarians have already had another workshop (Ilka), that produced flanged and laconian style tiles. The closest place and probable region of origin of that technology is Macedonia.

Thus, in the Late Roman period South-Western Crimea experienced a transformation of roof tile traditions. There was a developed local Roman tradition in Chersonesos and new workshops, founded in the barbarian territory of the region, where the production of ceramic building materials was hitherto unknown.

4 **BUILDING MATERIAL AND TECHNIQUES OF THE LATE ANTIQUITY: THE CASE OF NOVAE (MOESIA SECUNDA)**

Abstract author(s): Klenina, Elena (Uniwersytet Im. Adama Mickiewicza w Poznaniu)

Abstract format: Oral

The phrase “recycled building material” is ubiquitous nowadays. Various categories of building material are obtained from demolition projects, for example bricks and stone blocks. We use this material for ecological and economic reasons. In the late antiquity, building elements were reused for construction and reconstruction mainly due to economic reasons. We cannot ignore other circumstances, such as the leveling of the area together with remnants of existing buildings or tight deadlines for erecting new buildings. Building stone that is repurposed for new construction projects or decorative sculpture and reused in new buildings is called spolia. So far, scholars focused primarily on Greek and Roman architectural elements and details reused in later buildings, and reused building elements were studied only in general terms as iconographic and epigraphic evidence. The aim of the article is to present the category of mass building material, such as rusticated stone blocks, bricks and roof tiles, reused for the construction of public buildings in the early Byzantine city of Novae in the province of Moesia Secunda, together with their origins and reasons for reuse.

5 **BUILDING TECHNIQUES AND MATERIALS OF CONSTRUCTION AT SUCIDAVA (3RD - 6TH CENTURIES AD)**

Abstract author(s): Negru, Mircea (University of Bucharest; Spiru Haret University; University of Craiova) - Bohiltea-Mihut, Florica (University of Bucharest) - Dinu, Andrei-Alexandru - Badica, Petre (National Institute of Material Physics) - Batalu, Dan (Politehnica University of Bucharest) - Artene, Ilinca („Ion Creanga“ National High-school) - Basasteanu, Exter (University of Craiova)

Abstract format: Oral

From the middle of the 3rd century AD, the Lower Danube limes was one of the critical borders of the Roman Empire. In this context, in the late of 3rd century AD Roman Province of Dacia was lost probably before to be abandoned by Aurelianus Emperor.

The case of Sucidava suggests that since the late of the 3rd century AD, the Roman Empire was settled in a defensive position. A part of the settlement was surrounded by wall built in the Aurelianus reigns, that was rebuilt in the Constantin Period and then in the 6th century AD, on the almost the same location. The fort was built following the highest zone of the settlement, but there the included area in the Fortification zone was less than 10% of the settlement surface.

Also, we have to mention that in Late Roman Period, at Sucidava were some changes of some elements of construction techniques and materials. These are the alternations of the brick and stone rows in the construction walls and also the insertion of the brick fragments in the mortar.

Inside of the fortification there was constructed a Secret Fountain to provide water for the military troops in the time of the long sieges. It was built in bricks and stone. The lower part was built in stones and the upper one it was built with bricks.

In all edifices built since the end of the 3rd century until the end of the 6th century AD, there were used mortars that contained and little fragments of bricks.

Aknowledgements: Authors thank University of Oxford, Wolfson College, The Ancient World Research Cluster, United Kingdom for financial support through Lorne Thyssen Research grant and The Research Institute of the University of Bucharest through Scientific Research Projects Funds.

6 **A DIGITAL APPROACH TO THE STUDY OF BUILDING MATERIALS TO QUANTIFY THE ARCHITECTURAL ECONOMY OF ROMAN CIRCUSES**

Abstract author(s): Dininno, Domenica (Lund University; Institute of Cultural Heritage Sciences - CNR-ISPC)

Abstract format: Oral

The Roman circuses, capable of accommodating over 250,000 spectators, are considered among the greatest sporting venues of all time and are an example of the refinement in Roman construction techniques.

Their large size represents a potentially representative dataset because they better reflect economic trends but also the willingness of local elites to invest, through munificentia, in the growth of cities.

What building materials were used to build Roman circuses? And how much did it cost to build a circus? Did it cost the same in all regions of the Empire?

In recent years there have been numerous publications focusing on the economics of various construction and work processes (e.g. Abrams 1989, DeLaine 1997).

The well-preserved remains of the cavea of the Circus of Massenzio make it a perfect case study for calculating construction costs. This article will present the results of a pilot project focused on this case study, to be continued with 4 other circuses located in the Roman Empire.

The research proposed in this work is an ongoing interdisciplinary project and has a multilevel approach, involving socio-economic studies, and architectural energy, with the use of Building Information Modelling (BIM) and Machine Learning applied to archaeology.

The purpose of this study is to quantify the construction costs of circuses, starting from the calculation of the construction elements using a digital approach.

The methods used are: a) deconstructing buildings into measurable components and quantifying them using BIM. b) quantifying the number of bricks of a portion of the circus using new tools for classification, such as Machine Learning applied to archaeology (Dininno 2016 ; Dininno 2017; Grilli et al. 2018), c) estimating volumes and materials used in ancient buildings through architectural energetics in archaeology, which generates estimates of the amount of work and time dedicated to the construction of monuments.

7 BUILDING MATERIALS AND CONSTRUCTION TECHNIQUES IN EARLY MEDIAEVAL BOHEMIA: CASE STUDY OF THE ST. PETER AND PAUL ROTUNDA AT BUDEČ

Abstract author(s): Tomanova, Pavla (Institute of Archaeology of the Czech Academy of Sciences) - Valek, Jan - Kotková, Kristýna - Kozlovce, Petr (Institute of Theoretical and Applied Mechanics of the Czech Academy of Sciences)

Abstract format: Oral

The St. Peter and Paul Rotunda at Budeč, built in the late 9th or early 10th century, is the oldest fully preserved masonry construction in Bohemia (Czech Republic). Due to its high state of preservation and references to its erection in early medieval legends (in particular *Crescente fide* [bav 183 and cz 58], Kristian's Legend [28–29], Gumpold's Legend [148] and the Second Old Church Slavonic Life of Saint Wenceslas [89]), the church became a locus of historical memory. Its local significance made the church the focus of conservation efforts from the 19th century, as well as the subject of architectural, historical, and archaeological research. The findings allow the reconstruction of the historical framework and the macro-definition of the building materials used, which exemplify early masonry construction in the central European region. Recently, we began to investigate the mortars used. We have analysed their composition, technical quality of the materials used for in their production, and the possibilities of determining their chronology by radiocarbon dating.

The aim of this paper is to present the rotunda at Budeč as an example of early construction development in Bohemia and the approach to monumental conservation in the 19th and 20th centuries, summarise the results of past research and present the results of the latest mortar analyses.

8 THE SHAPE FOLLOWS MATERIAL: ARCHAEOLOGICAL TYPOLOGY OF IMPERIAL ROCKERY

Abstract author(s): Zhao, Yajing (Peking University, School of Archaeology and Museology; University of Bristol, School of Earth Science)

Abstract format: Oral

This paper presents a comprehensive examination of rockery, a type of stonework found in archaeological sites, with a focus on typology. Rockery, a unique stonework, expresses its artistic characters with plain texture and piling hand-crafts. Unlike previous studies, which have primarily focused on the shapes of these constructions, this research takes a more interdisciplinary approach, incorporating both materials and shapes. To be specific, the paper classifies five types of stone used in the rockery and uses modern geological surveys and mine sites to determine each source. Sampling hand specimens and thin sections from 23 royal garden sites are carried out to further understand the materials used. The study then subcategorizes the stones by size and shape, identifying a positive relationship between materials and shapes. Finally, the results of the choreology analysis suggest that changes in rock preference and alterations in shape and scale were influenced by the materials used in the rockery. The innovation of this research lies in its use of geoarchaeological methods. In particular, it aims to bridge the gap between historical literature and scientific petrology. Besides the temporal-spatial framework, it will rekindle the work of the Society for the Study of Chinese Architecture and inspire further studies in the handicraft industry from a technological history.

ON THE MARGINS: UNDERSTANDING THE CENTRE - PERIPHERY INTERACTION DURING THE TRANSITION TO FARMING [PAM]

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Tóth, Peter (Masaryk University) - Bickle, Penny (University of York) - Ivanova-Bieg, Maria (University of Vienna)

Session format: Regular session

In many regions, explanations for the spread of farming often focus on key sites in the region where the culture first develops or spreads out. These areas are often well researched and the target of multi-method approaches. For example, in the area of research we focus on, the Linearbandkeramik (LBK), the core areas of its origin, in Central Europe, and its spread westwards across central Europe have been the subject of many years of detailed and innovative research. Areas where the LBK later arrived - on the periphery of the culture's geographical distribution - are now beginning to see parallel research agendas being developed. This means we are currently in an excellent position to compare the "centre" and "periphery" (or marginal and border areas). The aim of this session is to debate and explore the similarities and differences we see arising from the processes of Neolithisation, presented in subsistence strategies, social structures, settlement patterns and material culture exchanges, between central and peripheral areas during the spread of agriculture, noting that once peripheral areas can become core over time. We invite papers that explore these themes in a wider range of early Neolithic cultures in Europe and further afield; and multiple methodological approaches (including those from the natural and social sciences). Our aim is, through discussion, to develop an idea of the general trends we see in research, and how we might further develop research agendas in these periphery - but no less important - regions of study.

ABSTRACTS

1 CONTACTING EACH OTHER, LEARNING FROM EACH OTHER - THE MARGINS BETWEEN THE NORTHERN BALKANS AND CENTRAL EUROPE, 6000-5500 BC

Abstract author(s): Banffy, Eszter (Institute of Archaeology Research Centre for the Humanities)

Abstract format: Oral

The short paper focuses on the consequences of meeting various, local and migrant groups with different subsistence strategies, and on how these strategies of all groups changed in the course of contacting each other, while every player had to adjust themselves to the changing environmental conditions, too. Under these circumstances, social conditions, cognitive changes as well as re-structuring in the ritual sphere followed as consequences. The scene is the Drava, Duna valley to the Lake Balaton region in the South western and Western half of the Carpathian basin. I shall present new results, mainly on architecture, cattle breeding and also, on some changes in the cognition of groups living aside each other, before genetic contacts emerged. I shall also talk about possibilities and challenges to reconcile aDNA data with the current archaeological record, but above all, the high diversity of stories about early farmers in the area in focus, and the emergence of the earliest LBK groups will be highlighted.

2 LIVING ON THE EDGE: THE EASTERNMOST LBK

Abstract author(s): Saile, Thomas (UWA) - Debiec, Maciej (University of Rzeszow) - Posselt, Martin (University of Regensburg) - Preoteasa, Constantin (Cucuteni Neolithic Art Museum)

Abstract format: Oral

Our lecture deals with settlement and cultural contacts in the eastern province of the Linienbandkeramik (LBK). Mobility and exchange contributed to the comparatively high degree of homogeneity observed across the large interaction zone of the LBK between the Seine and the Dnieper Rivers. This also applies to the pottery, whose decorative system developed in the eastern regions in a similar, if less differentiated way than in the core landscapes of the LBK further west. Since the LBK lands to the east of the Vistula River and the Carpathian Mountains once formed an integral part of the Bandkeramik cultural complex, it comes as no surprise that the emblematic element of the LBK, the longhouse, is now proven to have existed in its easternmost regions. However, settlement structures on the eastern periphery generally seem to extend only over smaller areas.

On the eastern fringes of the LBK, inspiration was drawn from the Mesolithic, the Bug-Dniester culture and the Neolithic communities of the Lower Danube. The expansion of the Linear Pottery culture came to a halt at the western edges of the steppe. Here the forest farmers of the LBK encountered their agro-ecological limits in the face of an increasingly continental climate. Towards the end of its cultural cycle, the LBK seems to have had little impact on the subsequent formation of other Neolithic cultures.

3 TRACING THE NEOLITHIC TRANSITION THROUGH THE LIPID ANALYSIS OF THE FIRST POTTERY

Abstract author(s): Tóth, Peter (Masaryk University) - Pokutta, Dalia (Masaryk University; University of Stockholm) - Bickle, Penny (University of York) - Slavíček, Karel (Masaryk University) - Pavúk, Juraj (Institute of Archaeology of Slovak Academy of Sciences) - Vizdal, Marián (independent) - Kaminská, Ľubomíra (Institute of Archaeology of Slovak Academy of Sciences) - Isaksson, Sven (University of Stockholm)

Abstract format: Oral

Transition to the Neolithic is usually connected with changes in settlement patterns, social and economic systems, as well as the adoption of new technologies, such as pottery. Lipid analysis of pottery vessels can act as a proxy to identify the economy, culinary traditions and social networks in this crucial period of human history. Evidence from the Mediterranean and South-Eastern Europe demonstrates that the spread of the Neolithic is, to some extent, linked to the availability of dairy products as a calorie-rich and potentially storable food source. However, increasing evidence from Northern Europe suggests that pottery vessels were part of a pre-farming package of technological innovations that led to more intensive food procurement, increased sedentism, higher population density and new exchange networks.

We want to contribute to the debate about the origins of farming through the lipid analysis of pottery during the Neolithisation in Slovakia. Until now, no such studies have been carried out in this area. We selected 11 sites covering Late Mesolithic and Early LBK, from which we analysed 50 samples from pottery for the presence of lipids. Preliminary results show the exploitation of various resources, including freshwater and marine, which challenge the existing theories about the Neolithisation and food in the region. It documents that the adoption of pottery was part of a new subsistence strategy, which enabled more intensive exploitation of particular food sources. The work is supported by the Grant Agency of the Czech Republic under contract No. GA20-19542S (Tracing the Neolithic transition through the first pottery; NEOPOT project).

4 "CENTRES AND PERIPHERIES" OF THE LBK IN NORTHERN LOWER AUSTRIA - CURRENT PROJECTS AND FIRST RESULTS

Abstract author(s): Pieler, Franz (State Collections of Lower Austria) - Längauer, Julia - Maurer, Jakob (University for Continuing Education Krems)

Abstract format: Oral

The spatial distribution of known LBK sites in northern Lower Austria (Middle Danube Region) suggests a structure of regional settlement clusters. As the inhomogeneous dispersal of the individual sites does not seem to be solely due to e.g. landscape features, to the state of preservation or to the level of research, we think that this structure might reflect socio-political factors.

In the northern part of Lower Austria, there are - until now - at least eight such regional clusters apparent, six of which contain one single large site each, often referred to as "central settlement". These large settlements are not just "more of the same", compared to smaller sites, but are outstanding in the quality and composition of the find spectre. Recent research established that these six large settlements possessed extensive enclosures, adding to their potentially "central" character.

In our contribution, we will first give an overview of the fortified potential Bandkeramik centres of Lower Austria and then focus on two clusters:

- 1) Breitenreich 5 and the Horn Basin cluster, where extensive field walking and geomagnetic prospection were carried out. Detailed site analysis allowed defining this region as a possible role model for a regional settlement network.
- 2) The other focus will be laid on the so far little known site cluster surrounding the famous settlement of Asparn/Schletz in the central Weinviertel region. Here, a new project ("United by Crisis?") focuses on the structure and development of the settlement cluster and its possible interaction with the "central site".

5 A MARGINAL NEOLITHIC? CONTRIBUTIONS OF PYRENEAN SITES TO THE UNDERSTANDING OF THE NEOLITHISATION OF THE NORTH-EAST OF THE IBERIAN PENINSULA

Abstract author(s): Gassiot Ballbè, Ermengol (Department of Prehistory, Autonomous University of Barcelona; Group of High Mountain Archaeology - UAB-CSIC) - Antolin Tutusaus, Ferran (Natural Sciences Division, German Archaeological Institute; IPNA/IPAS, Department of Environmental Sciences, University of Basel) - Clemente Conte, Ignacio (Institucion Milà i Fontanals - Spanish National Research Council - IMF-CSIC; Group of High Mountain Archaeology - UAB-CSIC) - Díaz Bonilla, Sara - Obea Gómez, Laura (Department of Prehistory, Autonomous University of Barcelona; Group of High Mountain Archaeology - UAB-CSIC) - Mata Ferrer, Sergi (Department of Prehistory, Autonomous University of Barcelona) - Mazzucco, Niccolò (Dipartimento di Civiltà e Forme del Sapere Dipartimento di Civiltà e Forme del Sapere, Pisa University) - Navarrete Belda, Vanessa (Laboratório HERCULES, Universidade de Évora) - Saña Seguí, Maria - Sierra Sainz-Aja, Alejandro (Department of Prehistory, Autonomous University of Barcelona)

Abstract format: Oral

Archaeological research in „marginal“ territories shown us that very often new perspectives on historical processes are obtained from these supposed margins. In many cases, these are perspectives that can hardly be offered by an exclusive focus on the key sites or the supposedly nuclear areas of these processes. The intensification of research on the Neolithisation of the mountain areas of the Pyrenees is a good example of this. On the one hand, it offers a wide range of new data on chronologically, technologically, subsistence, ecologically, etc., often obtained in the context of multi-method approaches studies. On the other hand, the information that these new contexts offer complements and qualifies previous perspectives on Early Neolithic in northeastern Iberia. Very often these perspectives assumed 1) a late Neolithification of mountain areas, with little or no interest in the subalpine and alpine altitudinal stages, and 2) a duality between a livestock-raising Neolithic in mountain areas versus an agricultural village Neolithic in the lowlands. The Pyrenean Neolithic sites introduce serious doubts about the viability of this model. Firstly, their earliest chronologies do not differ significantly from those of the lowland sites. Secondly, they show a mixed subsistence, with relatively diversified livestock and consolidated agricultural activity. Finally, they also seem to confirm a settlement pattern focused on valley and mid-slope areas from which the alpine areas were exploited for specific purposes. From a regional perspective, these data suggest that the Neolithisation of northeastern Iberia was a fairly rapid process and, in its early stages, with fairly homogeneous economic patterns territorially.

6 MAIZE AT THE MARGINS: EXPLORING CORE-PERIPHERY INTERACTIONS AND THE SPREAD OF THE FREMONT

Abstract author(s): Vernon, Kenneth (University of Colorado) - McCool, Weston (University of Utah) - Yaworsky, Peter (Aarhus University) - Medina, Ishmael (University of Utah) - Spangler, Jerry (Colorado Plateau Archaeological Alliance) - Brewer, Simon - Codding, Brian (University of Utah)

Abstract format: Oral

The spread of farming almost always involves interactions between a core farming population and a peripheral hunter-gatherer population. Here, we seek to explore those interactions directly, focusing on how they structure the spread of farming. Specifically, we seek to answer the following questions (i) Where do core farming areas tend to occur and why do they occur there? and (ii) How does the structure of peripheral populations affect their distribution? It remains a challenge, however, to incorporate such interactions into a statistical model. Fortunately, a lot of good work has been done on similar problems in ecology, particularly through the application of space-time point process or species distribution models that are fit using a Bayesian method known as Integrated Nested Laplace Approximation (INLA). As a test case, we use archaeological populations of mixed hunter-gatherers and maize farmers known collectively as „the Fremont“ who lived at the far northern periphery of maize agriculture in western North America, in an area encompassing much of the modern state of Utah north of the Virgin and Colorado Rivers, from roughly 2000 to 700 years BP.

A. THE DIET OF THE FIRST FARMERS RECONSTRUCTED ON FATTY ACIDS EXTRACTED FROM THE POTTERY

Abstract author(s): Malířková, Johana - Tóth, Peter (Masaryk University, Brno) - Kučera, Lukáš (Palacký University, Olomouc)

Abstract format: Poster

Sedentary lifestyle, agriculture and production of ceramic vessels are just a few aspects connected with the transition to farming, which in Central Europe happened around 5500 calBC. The first farming communities are associated with the Linear Pottery culture, which occupied large parts of Europe. The subsistence patterns of these communities are usually based on the study of archaeozoological or archaeobotanical material. However, they are not found in

large quantities compared to abundant pottery vessels. Recent research has demonstrated that ceramic vessels may contain lipids that can inform the type of food cooked, served or stored inside the vessels. We were interested in how subsistence strategy changes depending on various environmental conditions (lowland, upland, foothill and basin) with regard to individual spatial and socio-economic units – households. We chose 4 sites representing different environment, from which we selected well-preserved vessels of variable shape and size to extract samples for the presence of lipids. Preliminary results show culinary patterns based on fatty acid analysis extracted from the pottery to understand the variability of the first farmers' diet, the households' social-economic impact, and the function of pottery during food processing. The work is supported by the Internal Grant Agency of Masaryk University under contract No. MUNI/IGA/1179/2021 (Diet of the first farmers in Moravia based on lipid analysis; NEOLIP project).

B. EVIDENCE OF CRANIAL SURGERY 5000 BC AT SCHLETZ/LOWER AUSTRIA

Abstract author(s): Teschler-Nicola, Maria (Natural History Museum Vienna, Department of Anthropology; University of Vienna, Department for Evolutionary Anthropology) - Novotny, Friederike (Natural History Museum Vienna, Department of Anthropology) - Maurer, Jakob - Längauer, Julia - Hascher, Cornelia (University for Continuing Education Krems, Center for Museum Collection Management) - Pieler, Franz (State Collection of Lower Austria)

Abstract format: Poster

The Early Neolithic (Linear Pottery Culture, LBK) site of Asparn/Schletz, Lower Austria, comprises a settlement enclosed by a complex fortification system (including younger and older trenches). The excavations carried out between 1983 and 2005 yielded a wealth of unexpected archaeological finds and features; moreover, human skeletal remains of more than 130 individuals were recovered. These remains were in large parts found at the base of the outer trench, they are consistently incompletely represented, characterised by a variety of traces of fatal injuries (multiple traumas of peri-mortem origin caused by close combat weapons or distance weapons) and defects of the skeletons ascribable to gnawing by animals. Thus, we assume that the inhabitants of the Schletz site became victims of a violent attack to the settlement around 5000 BC.

Among the human remains we identified two skulls that did not only exhibit lethal injuries caused during the “big conflict” at the end of the LBK, but they also reveal signs of trepanation, possibly surgical treatments. Bony reactions at the edge of these injuries, verified by μ CT inspection and REM, indicate healing and survival by several years. Trepanned skulls from the late Neolithic have been reported relatively frequently, but there is only one comparable individual (a male from Ensisheim) which also dates to the final phase of the LBK. The two cases from Schletz are reported and discussed here within the context of the “United by Crisis”-project. They represent the oldest finds of a medical intervention on the Austrian territory and will deepen our knowledge about social interactions and a possibly arising conflict-potential at the final phase of the settlement; this new discovery may also underscore the existence of therapeutic and anatomical knowledge in this Early Neolithic community.

298 COMPANIONS, COMPETITORS, FELLOW TRAVELERS – BIOMOLECULAR AND ZOOARCHAEOLOGICAL EVIDENCE OF HUMAN-CARNIVORE INTERACTIONS IN THE PAST

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Popovic, Danijela (Centre of New Technologies, University of Warsaw) - Bauman, Chris (Department of Geosciences and Geography, University of Helsinki; Department of Geosciences, University of Tübingen) - Krajcarz, Maciej (Institute of Geological Sciences, Polish Academy of Sciences) - Krajcarz, Magdalena (Department of Geosciences, University of Tübingen; Institute of Archaeology, Nicolaus Copernicus University in Toruń)

Session format: Regular session

The common history of human-carnivoran coexistence combines a millennia-long record of mutual events and interactions: predation, competition, commensalism, migration, domestication, and extinction. The causes, types, and intensity of such interactions were undoubtedly the result of the complex impact of environmental conditions, evolutionary adaptations, the development of human culture and civilization, and human perception. Large carnivorans were perceived as a direct physical threat to people, simultaneously being most vulnerable to rapid extinction in human-dominated landscapes, while the smaller species had a larger potential to co-adapt.

A history of such past interactions can be traced using a zooarchaeological record. But in the last decades, it has been tremendously complemented by a wide range of molecular methods, such as direct dating, proteomics, genetics, and stable isotopes. The results allowed an in-depth look at carnivoran biogeography, population history, diet, and ecology. Following the recent advances and discoveries, the session will focus on the past relationships between humans and carnivorous mammals and birds across time and space – from the earliest stages of humanity until modern times. The aim is to bring together case studies from different parts of the globe and for a variety of carnivore taxa and to open up

a discussion between the biomolecular record and interpreting archaeological evidence. The theme intends to explore the dynamics and evolution of the relationships through time, seen from an ecological and cultural perspective. The session is also open to palaeobiological and conservation-related issues with the aim of integrating archaeological and present perspectives on managing the coexistence of carnivores and humans.

ABSTRACTS

1 THE PALEO-SYNANTHROPIC NICHE: A FIRST ATTEMPT TO DEFINE ANIMAL'S ADAPTATION TO A HUMAN-MADE MICRO-ENVIRONMENT IN THE LATE PLEISTOCENE

Abstract author(s): Baumann, Chris (Senckenberg Gesellschaft für Naturforschung)

Abstract format: Oral

Synanthropic behavior, i.e., behavior of wild animals that benefit from a shared ecology with humans, has existed long before the sedentarization of *Homo sapiens* during the Neolithic, around 10,000 years ago. This study describes and discusses the concept of an older animal-human relationship: paleo-synanthropic behavior and the associated paleo-synanthropic niche. Key features of this new niche are anthropogenic food waste from mobile hunter-gatherers as a stable food base for small opportunistic scavengers and a human-near environment safe from large predators. By linking the niche to human behavior rather than to a specific location or structure, this niche was accessible for a long time, even in the Late Pleistocene. Like modern synanthropic animals, members of the paleo-synanthropic niche experienced an increase in population density and a decrease in home range. This, in turn, made it easier for humans to capture these animals and use them as resources for meat, fur, or feathers, as seen in the zooarchaeological record of many European Late Pleistocene sites. As a disadvantage, diseases such as zoonoses may have spread more easily.

2 THE SCAVENGERS IN MY GARDEN: THE HISTORY OF HUMAN-RAPTOR RELATIONSHIPS IN THE UK THROUGH STABLE ISOTOPE ANALYSIS

Abstract author(s): Waterman, Juliette - Black, Stuart (University of Reading) - Sykes, Naomi (University of Exeter) - Fellowes, Mark (University of Reading)

Abstract format: Oral

Wild birds of prey have a complex and chequered history in the UK, having been at various times under legal protection as valued scavengers and at others targeted by laws placing bounties on 'competing' wildlife. Today persecution remains a persistent problem, but public feeding stations and garden feeding of reintroduced birds are common. This project aims to unpick these complex relationships between humans, raptors, and food using stable isotopes to explore variation in diets. We focus on the red kite (*Milvus milvus*) and white-tailed eagle (*Haliaeetus albicilla*), both opportunistic scavengers which seem to have occasionally occupied a commensal role in past environments and likely exploited human foodstuffs. Depending on context this may include household or commercial waste, livestock, poultry or game animals (as live or scavenged prey), and deliberately provisioned food. Although they may have lived in closer proximity to past settlements, both were persecuted to near- or complete extinction in the 19th-20th centuries with a subsequent reintroduction in the late 20th century. We present a dataset of carbon and nitrogen isotope values from bone collagen from 58 Scottish kites and eagles held by the National Museum of Scotland dating between 1894-2013. This dataset includes several historic individuals from before the birds became extinct, with the majority dating from the reintroduction period onwards. As they were collected in relation to ongoing monitoring during reintroduction many have high-resolution biographical data including age, sex, place of origin, cause of death, and nutritional status. The results show identifiable differences between birds and groups that may relate to the consumption of anthropogenic food. The aim of this dataset is to build a baseline of scavenger dietary isotopes from historic and modern birds which will allow for comparisons with later analyses on archaeological birds.

3 EATING AT THE SAME TABLE: TRACKING THE INTENSIFICATION OF HUMAN-CANID RELATIONSHIPS THROUGH DIETARY ISOTOPES AND ZOOARCHAEOLOGY

Abstract author(s): Ameen, Carly - Peto, Jessica - Sykes, Naomi (University of Exeter) - Evin, Allowen (CNRS, University of Montpellier)

Abstract format: Oral

The Late Pleistocene partnership between humans and a carnivore competitor which led to humanity's first domesticate stands at odds with the docile companions we know as dogs today. Despite extensive efforts to unravel the timing and location of the domestication of the dog from a population of grey wolves, definitive answers remain elusive. Increasingly, zooarchaeologists are turning to cultural clues to decipher the changing intensity of the relationship between humans and canids which better capture the dynamic and fluid nature of domestic partnerships as opposed to a single definitive event in time. Dietary stable isotopes provide an exceptionally powerful window into the lives of

individuals in the past. While many studies focus on the role that dogs can play in acting as a dietary proxy for their human companions, this paper will explore how a deeper analysis of the changing diet of canids in their own right, when compared to contemporary human diets, can reveal valuable insights into the dietary changes which occurred during the transition from wild to domestic canids. By exploring these changes in diet through time, we can examine the intensification of human management of canids, and the tightening and loosening of the control humans had over canids through time. This paper will provide important insights into the role that dietary changes played in shaping the relationship between humans and canids in the past. This reconsideration of dietary isotopes alongside zooarchaeological data will help our understanding of the processes of animal domestication, the role that intentional (or inadvertent) anthropogenic feeding had on solidifying those relationships, and will contribute to the ongoing debate around the timing and nature of the origins of the domestic dog.

4 THE LOST WOLF: USING ZOOARCHAEOLOGICAL AND BIOMOLECULAR TECHNIQUES TO UNDERSTAND WOLF EXTINCTION AND CHANGING HUMAN-WOLF RELATIONSHIPS IN THE UK

Abstract author(s): Peto, Jessica - Ameen, Carly (University of Exeter) - Barclay, Alistair (Cotswold Archaeology) - Lamb, Angela (British Geological Survey) - Madgwick, Richard (Cardiff University) - Sykes, Naomi (University of Exeter)

Abstract format: Oral

The timing of the extinction of wolves in the UK, as well as factors that contributed, is currently unknown. Historical evidence refers to a thriving population of wolves existing into the Medieval period before being hunted into extinction. These textual sources are seen by many historical ecologists as definitive evidence for the persistence of wolves; however, this is not supported by the archaeological evidence. There are very few wolf bones post-dating the Roman period, and currently a wolf mandible dated to 1840 ± 22 years BP represents the most recent, definitively identified wolf in England. Yet even many of the Roman finds could be associated with traded skins rather than evidence of a persistent wolf population in the UK. This zooarchaeological absence of wolf remains has been argued away on the basis that differentiating between wolf and dog bones is difficult. Whilst separation between the species can be problematic, especially for post-cranial bones, the two can be easily speciated using mandible and tooth morphology. This paper will focus on clarifying the wild or domestic status of large canids recovered from Roman and Medieval sites utilising a combination of dietary isotopes and carnassial tooth metrics. It will present an accurate methodology for the identification of wolves from archaeological contexts, and explore how canid dietary isotopes can shed light on how a dwindling population of UK wolves adapted to the coming threat of extinction. Together, these methods will allow us to reconsider the identification of wolves lost from the archaeological record, as well as explore the physical evidence for the hypothesis that wolves were extinct, or at least struggling, long before the Medieval period. Understanding the factors leading to the extinction can provide insight into how the actions of humans contributed to the disappearance of wolves.

5 ISOTOPIC PALEOECOLOGY OF MESOCARNIVORANS IN POLISH JURA DURING THE HOLOCENE - THE HISTORY OF ADAPTATION CAUSED BY ANTHROPOPRESSURE

Abstract author(s): Krajcarz, Maciej (Institute of Geological Sciences, Polish Academy of Sciences) - Krajcarz, Magdalena (Department of Geosciences, University of Tübingen) - Baumann, Chris (Department of Geosciences, University of Tübingen; University of Tübingen Department of Geosciences and Geography, University of Helsinki) - Wilczyński, Jarosław (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences) - Sudół-Procyk, Magdalena (Institute of Archaeology, Nicolaus Copernicus University)

Abstract format: Oral

During the hunting-gathering phase of prehistory, human caused a relatively limited impact on ecological systems. The increase of human population, development of densely populated centers, and introduction of new subsistence modes, had strongly influenced the ecological balance. Anthropopressure on wild carnivores during the several last millennia included ecological limitations, but in some cases, it also provided new food sources and new landscapes to exploit. The guild of mesocarnivorans (mid-sized mammalian carnivores) is often underestimated in palaeoecological studies. Unlike large carnivores, mesocarnivorans are still present in the human-modified world. Some of them survived in even better status, but not unharmed – with habitats altered, geographical ranges shrank and ecological niches shifted.

In our study, we focus on the last 10,000 years of mesocarnivorans ecological history in Polish Jura (southern Poland). Well preserved and extensively studied Holocene cave sediments provided numerous fossils of four genera: *Vulpes*, *Martes*, *Meles* and *Felis*. We use stable isotope analysis of collagen C and N to reconstruct the nutrition-related issues, including intra-taxon characteristics and inter-taxon relationships. Using stratigraphic constraints and a large number of direct radiocarbon dates we identify the chronology of variable ecological adaptations and changes within the mesocarnivoran guild, including the sharing or taking over the niches, and the manner and extent of the

exploitation of anthropogenic resources and artificial environments. We focus on several periods related to large-scale culturally-induced environmental changes, which include: the beginning of the Neolithization marking the end of ecological balance during the Mesolithic; the Eneolithic transformation of agriculture toward extensive cropping and arrival of synanthropic/domestic mesocarnivorans; the stabilization and further growth of a settlement network during the Bronze Age-Iron Age; until the strong development of agriculture, urbanization and deforestation during Middle Ages and modern period.

The study was funded by the National Science Center of Poland, grant No. 2017/27/B/NZ8/00728.

6 THE RELATION OF FOXES AND OTHER WILD CARNIVORES WITH HUMAN COMMUNITIES DURING THE NEOLITHIC OF ROMANIA: A STABLE ISOTOPES APPROACH

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Abstract format: Oral

Currently, red fox show synanthropic behaviour: they move around human settlements to eat human leftovers, feed on micromammals on agricultural fields, but also could attack domestic animals, which makes the fox a beneficial but also a controversial species.

Human groups associated with Boian and Hamangia cultures, emerged in the 6th millennium BC in the Northern Balkans (Southeaster Romania and Northeaster Bulgaria) on the Lower Danube valley and the Black Sea coast. Later, in the middle of the 5th millennium BC, these communities evolve into the Kodjadermn-Gumelnita-Karanovo VI (KGK VI) culture. These societies were characterised by agricultural and livestock economies exploiting natural resources from hunting, fishing and gathering wild fruits.

In this work, we are going to analysis de diet of red foxes and other carnivores (Eurasian badger, marten, wild cat and Eurasian otter) (n = 30) by means of stable isotopes for 4 sites in Romania: Cheia, Gumelnița, Hârșova, and Vitănești (that covers Boian, Hamangia and KGK VI), and compare it with the published data of the domestic and wild animals from those sites, in order to set up the trophic relations of the Neolithic foxes. The remains of these carnivores, as well as the domestic animals (including the dogs), were found in pits (in the cemetary) or rubbish areas on the tell settlement but not in graves. The primary use could be for their fur, although their use as food cannot be ruled out.

The $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values resulting from foxes investigated show a similar diet of some of Neolithic dogs, suggesting that the Neolithic foxes of Southeastern Europe already exhibited synanthropic behaviour.

This work was supported by two grants of the Romanian Ministry of Research, Innovation, and Digitisation and CNCS - UEFISCDI, project number PN-III-P4-ID-PCE-2020-2369, and contract number 41PFE/30.12.2021, within PNCDI III.

7 HOW MUCH CARNIVOROUS ARE YOU? ADVANCES IN SINGLE COMPOUND NITROGEN ISOTOPIC ANALYSIS OF CARNIVORE TROPHIC POSITION

Abstract author(s): Krajcarz, Magdalena (Department of Geosciences, University of Tübingen) - Krajcarz, Maciej (Institute of Geological Sciences, Polish Academy of Sciences) - Bocherens, Hervé (Department of Geosciences, University of Tübingen; Senckenberg Centre for Human Evolution and Palaeoenvironment)

Abstract format: Oral

Estimating the trophic position of animals and humans is among the most common applications of stable isotopes in paleoecology. It allows, among others, concluding on the level of human carnivory; comparing ecological niches of humans and other carnivores; and reconstructing the importance of meat in the diet of synanthropic or domestic carnivorans. The principal rule is that amount of ^{15}N increases along a trophic chain. The bulk collagen $\delta^{15}\text{N}$ analysis has several limitations, especially while exploring complex anthropogenic environments. The development of mass spectrometry and isolation techniques during the last decade allows measuring the $\delta^{15}\text{N}$ in individual amino acids (AA), isolated from fossil collagen. The main parameter is the Glu-Phe trophic discrimination factor (TDF), which represents a difference in $\delta^{15}\text{N}$ between glutamic acid and phenylalanine – two AAs that have different rate of $^{15}\text{N}/^{14}\text{N}$ increase along the trophic chain. Using the TDF offers a great research potential; however, the exact value of TDF has not been yet verified in terrestrial mammal-based collagen-to-collagen systems. Improving the method by better approximation of the TDF is the objective of the new ‘IsoTroph’ project, implemented at the University of Tübingen. This is to be obtained by the analysis of $\delta^{15}\text{N}$ in Glu and Phe of a predator population and that of its prey. To achieve this, the project will involve a study of modern populations (collections of recent bones of wolf, lynx, red fox, and their prey), as well as a collection of fossils from a Pleistocene carnivore den (cave hyena and its prey). These

collections will provide insight into four species of mammalian carnivores representing variable ecology (both hyper-carnivores and omnivores) and different chronology (recent and Pleistocene).

Project is funded by the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 101023317.

8 BRONZE AGE AGROPASTORALISTS AND SEAL HUNTERS FROM SAAREMAA ISLAND (ESTONIA)

Abstract author(s): Wojtal, Piotr - Kowalik, Nina (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences) - Lõugas, Lembi (Archaeological Research Collection, Tallinn University) - Pospuła, Sylwia - Religa-Sobczyk, Joanna - Sawka-Gądek, Natalia (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences) - Spötl, Christoph (Institute of Geology, University of Innsbruck)

Abstract format: Oral

Only some aspects of the Bronze Age cultures in Europe have been well studied, most notably the material culture and manufacturing economies that developed after the introduction of bronze as a new raw material for toolmaking. Not many studies have been carried out on animal husbandry and hunting practices among the Bronze Age societies at the peripheries of this cultural area. And few analyses have been performed on animal remains from the sites with rather harsh environmental conditions, such as the islands of the south-eastern Baltic Sea. We studied mammal remains from two Estonian settlements on the Saaremaa Island of Asva and Ridala, both of which provide a rich and variable archaeological and zoological material. Results of the zooarchaeological investigations show that domestic as well as wild animals, especially seals, were of great importance for the inhabitants of Saaremaa during the Bronze Age. Analyses of isotopes (strontium and oxygen), aDNA and season of death complement the zooarchaeological investigations. Oxygen isotope data of the dental enamel of domestic mammals are consistent with the $\delta^{18}\text{O}$ isotope composition of drinking water in these locations, suggesting that the animals may have used these water sources. Analyses also revealed that $\delta^{18}\text{O}$ isotope composition of dental enamel records seasonal diet changes. This record will be combined with the results of Sr-isotope analyses in order to investigate provenance, trade and seasonal pastoral practices. The study of the light and dark bands in seasonally forming tooth cementum increments, revealed that the domestic mammals died in summer, and that farmers kept them for over one year. Analyses of the tooth cementum increments, the isotopic (Sr and O) composition, as well as aDNA analyses of the seals from these Bronze Age sites are currently underway.

9 DOMESTIC CAT IN CENTRAL EUROPE: HUMAN-MEDIATED DISPERSAL OR NATURAL INTROGRESSION?

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Abstract format: Oral

Despite the very dynamic development of paleogenomics and the increasing amount of new data on animal domestication, we still know nothing about cats. Until now, it was known that only one species, the Near Eastern wildcat (*Felis silvestris lybica*), was domesticated. The domestication process probably occurred in the two centers, the Near East and Egypt. From this area, tamed/domesticated cats spread throughout the Mediterranean and beyond. It has been accepted that the primary role in cat's expansion through the northern part of Europe was that of the Roman legions. However, we found that cats that carried mitochondrial DNA (mtDNA) haplotypes of wildcats from the Near East were already present in Central Europe in the Neolithic. This indicates that the cats' route from the domestication centers to Central Europe might have been more complex than previously thought and could be related to human migrations. Our new results revealed the presence of the mtDNA haplotypes of the Near Eastern wildcats in Poland even in the pre-Neolithic period. This could suggest that the natural range of the Near Eastern wildcat was much broader than was assumed. We believe that our ongoing nuclear DNA analyses will elucidate whether the appearance of mtDNA of the Near Eastern wildcats in Central Europe was a natural admixture between two subspecies or was human-mediated dispersal of tamed/domesticated cats.

The study is supported by the National Science Centre, Poland, grant no. 2019/35/B/HS3/02923.

FULL MITOCHONDRIAL GENOMES OF THE UPPER PALEOLITHIC RED FOX AND ARCTIC FOX FROM THE SWABIAN JURA, SOUTHWESTERN GERMANY

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Abstract format: Oral

Where have all the arctic foxes in the south gone after the Last Glacial Maximum (LGM)? Do the red foxes in temperate Europe maintain genetic continuity up until now? An ancient DNA study of red and arctic foxes holds keys to answering these questions.

We examined fox remains recovered from the pre- and post-LGM deposits from caves in the Swabian Jura, Southwestern Germany. This study reports the full mitochondrial genome sequences of prehistoric foxes, including the oldest and the southernmost arctic fox individuals, and the oldest prehistoric red fox individuals.

These ancient arctic foxes carry novel haplotypes that are not observed in modern ones, suggesting the loss of genetic diversity after the LGM. Some arctic fox individuals shared haplotypes with modern ones, on the other hand implying the genetic contribution from the ancient Central European arctic foxes to the modern Holarctic ones.

The ancient red fox sequences from this study form three different clusters. An individual from clade 1 carries a unique haplotype and is similar to the Nearctic North American clade. Individuals from clade 2 carrying unique haplotypes are closely related to the modern Holarctic basal clades, including the European and Middle Eastern individuals. Clade 3 shares the haplotypes with the modern Holarctic individuals. These observations imply that there used to be a basal clade across Holarctic region around the LGM. We hypothesize that subsequently, red foxes spread across Eurasia and North America to form the modern genetic diversity.

THE DIFFERENT ROLE OF CARNIVORES IN ANTHROPOGENIC CONTEXTS: A TAPHONOMICAL APPROACH FROM THETOLL AND TEIXONERES CAVES (BARCELONA, SPAIN)

Abstract author(s): Rosell, Jordi - Blasco, Ruth (IPHES-CERCA; URV) - Rivals, Florent (ICREA; IPHES-CERCA; URV) - Rufà, Anna (ICArEHB - Universidade Do Algarve; Université de Bordeaux)

Abstract format: Oral

The usual appearance of carnivore remains - and bone modifications produced by their activities - in Middle Palaeolithic (MP) sites has generated a long discussion on the influence of these animals in the Neanderthal lifeways and on the modelling of their behaviour. Confrontation, dependency (scavenging) and competition concerning the use of caves and/or prey acquisition are some of the scenarios emerging on these mutual relationships. However, detecting evidence of direct interaction in the MP record is not an easy task for archaeologists. Most of these localities are palimpsests composed of an alternation of human and carnivore occupations, which usually means temporal distance between scenarios and, therefore, an absence of contact. Nevertheless, on some occasions it is possible to identify evidence of direct interaction, especially in the form of human-induced damage on carnivore bones. In this study, we attempt to contribute to the topic by presenting taphonomical data from the Toll and Teixoneres caves (Barcelona, Spain, MIS 3). Toll Cave is interpreted as a hibernation place for the cave bears and frequently used as den by other carnivores, mainly hyenas. Some lithic artefacts associated with cut-marked bear bones have been recovered, suggesting periodic human visits to the cave, either to take advantage of the carcasses of bears that have died during hibernation or to take advantage of the bears' lethargy to hunt them. Teixoneres Cave draws a totally different scene despite being located no more than 100m away. This locality contains an alternation of carnivore dens and Neanderthal campsites. Although no evidence of direct contact or confrontation have been detected, the spatial distribution and the absence of specific anatomical parts suggest frequent carnivore scavenging events. Our attempt here is to provide data on the role of carnivores in anthropogenic contexts, as a sign on a road map of hominid-carnivore interactions during the MP.

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THE LEVANTINE SPOTTED HYENA: DIETARY PREFERENCES AND THEIR IMPLICATIONS FOR THE INTERACTION WITH HUMANS IN THE LATE PLEISTOCENE LEVANT

Abstract author(s): Orbach, Meir (Zinman Institute of Archaeology, University of Haifa)

Abstract format: Oral

Late Pleistocene humans and hyenas shared several common traits: top predators, social hunters, bone collectors and cave users, making their niches very similar. Furthermore, their documented hunting preferences that emphasized taking medium-sized ungulates, could have brought them into strong competition.

A core question in the study of the extirpated *Crocota* population of the Levant is when they became hunters. This question is interesting by itself as it sheds light on the ecology of an extinct population, but also bears significance for paleoanthropology. Bone remains are a lot more abundant in Pleistocene hyena dens than in recent African dens. It been suggested that since recent African *Crocota* populations hunt, they collect less bones than the scavenging Pleistocene hyenas, i.e. their hunting behavior evolved recently. In the very same time, Levantine Upper Paleolithic hunters changed their hunting preference and leaned heavily on the small local antelope, mountain gazelle. Did the Levantine humans and hyenas changed their diet simultaneously?

Change in teeth is an excellent indicator for dietary shifts. Kurten (1965) noticed slight differences in the proportions of the front and the back teeth between European and Levantine Pleistocene hyenas. Those can be attributed to feeding adaptations, namely hunting vs. scavenging.

New excavations of several Israeli caves during the last decade yielded numerous hyenid remains, enabling us to check Kurten's hypotheses and the human vs *Crocota* diet. Zooarchaeological, taphonomic and osteological analysis of the new finds as well as the old fossils and comparative materials will help us to explore the Levant human and hyenid feeding behavior.

Reference cited

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13

MAN'S TASTY FRIEND. DOG POPULATIONS, THEIR RELATIONS WITH HUMANS, AND THEIR IMPACT ON NEOLITHIC OSTEOARCHAEOLOGICAL ASSEMBLAGES

Abstract author(s): Wilczynski, Jaroslaw - Pospuła, Sylwia - Matyaszczyk, Lena (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences) - Sobkowiak-Tabaka, Iwona (Faculty of Archaeology, Adam Mickiewicz University)

Abstract format: Oral

As the first domesticated animal species, the dog has accompanied man for at least a dozen thousand years. During this time, he served as a companion, guard, shepherd, and even a meal for human societies. In our contribution, we would like to present the results of the latest studies of animal osteological assemblages collected from today Poland's Early Neolithic and Eneolithic settlements. In our studies, we were interested in the dog's impact on the preserved osteological material and the dog's remains. Our presentation will focus on dog populations; their body size, and cranial and post-cranial skeleton morphometry. We will also take a closer look at the dog's remains for disclosure of any marks left by humans and carnivores and the pathological changes resulting from their breeding conditions and age. On this basis, we will trace the close relationships between Neolithic societies and their four-legged companions. This question is very important not only because of the human-animal relations study itself but also because carnivores are an important taphonomic factor affecting bone assemblages, limiting and shaping their quantity, quality, and value.

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DOG SKELETAL DEPOSITS FROM THE PRZEWORSK CULTURE IN KUYAVIA REGION, POLAND: ZOOARCHAEOLOGICAL ANALYSIS

Abstract author(s): Majbrodzka, Zuzanna (Institute of Archaeology, Nicolaus Copernicus University in Toruń)

Abstract format: Oral

For many years, archaeologists have been discovering complete or partial dog skeletons deposited on the sites of Przeworsk culture on the territory of modern Poland. They were deposited both during the La Tene and the Roman period. The latter shows a particular abundance of dog deposits, and it may tell us something about the ritual practices of people of this time. The Kuyavia region, which is now part of the Kuyavian-Pomeranian voivodeship of north-central Poland, is especially rich in findings of this kind. The dog deposits were found in various contexts: within and outside the households, in pits, wells, and so-called ritual spaces. The deposits were often discussed in the scientific literature. However, they lacked a more detailed zooarchaeological analysis, which could shed new light on the subject. With this presentation, the author wants to present a group of dog deposits found on the site of Sławsko Wielkie 12 (Kuyavian-Pomeranian Voivodeship, Poland). It summarizes the results of a recently conducted anatomical, osteometric and paleopathological analysis compiled with available archaeological context. Additionally, the results of conducted

radiocarbon dating will be presented. All of this can be used to widen our previous knowledge of cultural practices related to dogs in the Iron Age.

15 LAYING DOWN WITH DOGS: THE ROLE OF CANIS FAMILIARIS IN MONGOLIA AND TRANSBAIKAL DURING THE XIONGNU PERIOD (C.250 BC-150 AD)

Abstract author(s): Cameron, Asa (Yale University)

Abstract format: Oral

The Xiongnu Period (c. 250 BC-150 AD) of Mongolia and Transbaikial marks the rise of the first nomadic empire in eastern Eurasia. This shift in political organization brought with it novel forms of burial practices, farther reaching and more intensive long-distance trade and interaction networks, and fundamental alterations to subsistence practices. In addition, under the Xiongnu there is a dramatic change in the frequency and treatment of domestic dogs (*Canis familiaris*) in the archaeological record. While this shift in burial and consumptive practices are indirectly acknowledged in the academic literature, the potential causes for and meaning behind the elevated importance of dogs during the Xiongnu Period remains unexplored. This study examines human-canine relationships during the Xiongnu Period through a review of dog mortuary offerings and the presence of dog skeletal remains in faunal assemblages at burial and settlement sites across Mongolia and Transbaikial. Included in this discussion are new skeletal data recovered during recent excavations at Khurts Del, a Xiongnu Period ring grave cemetery located in the Gobi-steppe of south-eastern Mongolia. A comparison of these data with dog remains documented in adjacent regions of Eurasia allows for speculation of the potential causes for the shifting nature and prominence of human-canine relationships in the archaeological record at this time.

16 DINNER GUESTS OR CIRCUMSTANTIAL ASSOCIATION OF HUMANS AND CARNIVORES

Abstract author(s): Arroyo-Cabales, Joaquin (Instituto Nacional de Antropología e e Historia) - Morett-Alatorre, Luis (Museo de Agricultura, Universidad Autónoma Chapingo) - Johnson, Eileen (Museum of Texas Tech University)

Abstract format: Oral

The TOCUILA Archaeological-Paleontological site (State of Mexico) is located at the eastern edge of the original Texcoco Lake in the Basin of Mexico. The late Pleistocene locality formed by several volcanic ash mudflows that moved and buried more than a thousand bone elements pertaining to Columbian mammoth (*Mammuthus columbi*) and other animals, such as camels, horses, felids, and small mammals, between 10 to 12 thousand years ago. Several bones with anthropic marks were identified from the excavation unit UE1. Furthermore, the presence of carnivore gnawing, mainly on long bones epiphyses and diaphyses as well as rib fragments, and previous or after human-related evidences, provides the occasion to think about the potential "agreement" relationships or reciprocal beneficial society between humans and some carnivore species. This initial study involved carnivore marks found on the mammoth bones, trying to identify the actual species; actualism assays involving looking at weathering patterns on bovine femuri and breakage behavior on direct impact; and looking at patterns of bones consumption and gnawing produce by dogs. Finally, comparisons are made with other sites with human-carnivore relationships. At Lubbock Lake Landmark (Texas), within both adult and juvenile mammoth remains exhibit carnivore marks in conjunction with cultural modifications. Wolf (*Canis lupus*) is the primary contender, but dire wolf (*Aenocyon dirus*) cannot be ruled out yet. The proximal end of a short-faced bear (*Arctodus simus*) radius exhibits various cultural modifications, including evidence of its use as an expediency tool in butchering operations. In late Holocene deposits (dating ~350 radiocarbon years), a kennel pattern involving bones from a bison kill suggest the presence of domestic dog. At Lehner Ranch, calcined bear cub teeth found in a roasting pit dating ~10,940 radiocarbon years suggests bear was on the menu for Clovis peoples.

17 EXPLORING THE RELATIONSHIP BETWEEN CANIDS AND PEOPLE OF THE SOUTHERN HIGH PLAINS (USA). CARNIVORE MODIFICATION IN A MID-18TH CENTURY BONEBED

Abstract author(s): Jones, Lila - Johnson, Eileen (Museum of Texas Tech University)

Abstract format: Oral

Taphonomic analysis of a mid-18th century bison and horse bone bed yielded carnivore modified bone of both species. Radiocarbon dating of a bison periotic dated the site to the mid-1700s (~1756; 194± 20 BP), a time of Comanche occupation of the region. Furrowing and scooping of cancellous bone were recorded along with crenulated edges. In some cases, long bone epiphysis were removed entirely. Long bones and ribs of both adult and juvenile specimens presented varying intensity of modification. Wolf (*Canis lupus*) and domestic dog (*Canis familiaris*) were the main contenders for the canid modifications. Wolves were present on the Southern High Plains of North America since the Pleistocene but now are extirpated. Comanche and other Southern Plains tribes were known to have dogs. Geometric morphometrics of post-cranial specimens from a canid encountered within the assemblage, and overall lack

of diagnostic skeletal elements recovered, left the species of the canid uncertain. It appeared to be neither wolf nor domestic dog and suggests the possibility of a wolf-dog hybrid. Such hybrids were known for Plains tribes at this time. The intensive modification of some of the ungulate bone recovered in the assemblage may be the result of scavenging after humans had moved their camp, or possibly evidence of domestic canid companions to the occupants of the site.

A. AN UNUSUAL BURIAL COMPANION: A FELINE SKELETON FROM THE AVAR PERIOD SITE IN OBID (SLOVAKIA)

Abstract author(s): Barta, Peter (Nuclear Physics Institute, Czech Academy of Sciences; Bratislava City Museum) - Bielichová, Zora (Institute of Archaeology, Slovak Academy of Sciences) - Popović, Danijela (Centre of New Technologies, University of Warsaw)

Abstract format: Poster

Extremely rich finds from more than 100 burial grounds and 6,000 graves in SW Slovakia testify to the significance of animals in burial customs of Slavic and Avar tribes in the Carpathian Basin (7th–8th cent. AD). Despite the inter-site variations in species, age and sex, elements deposited and their location in graves, the most important were domestic animals, among others the cattle, sheep and chicken. Together with the eggs of poultry, they represent the most common food and symbolic offerings.

The graves of horsemen with complete body of horse buried next to rider are usually present in the Avar period. In addition to the deposited animals or their body parts, solitary burned bones scattered in the graves' backfill indicate consumption or incineration of animals in further parts of the funeral ritual.

Until recently, the only carnivore occurring in the Avar period burials was the domestic dog. Yet, the new analysis of the archaeofaunal material from Obid brought to light an unexpected discovery of a feline skeleton in one of the graves.

In our poster we present osteological and palaeogenetic research confirming that the animal bone remains accompanying an old man belong to a young adult domestic cat (*Felis silvestris catus* L.) skinned shortly before or during the funeral ceremony. We also present two ¹⁴C dates on cat and one on human bone collagen, and discuss the need of IRMS identification of aquatic reservoir offsets.

This research was supported by OP RDE, MEYS under the project Ultra-trace isotope research in social and environmental studies using accelerator mass spectrometry, Reg. No. CZ.02.1.01/0.0/0.0/16_019/ 0000728, grant no. 2019/35/B/H53/02923 funded by the National Science Centre, Poland and the project VEGA 1-0240-21 funded by the Ministry of Education, Science, Research and Sport of the Slovak Republic.

299 FROM WHAT THINGS ARE TO WHAT THINGS OUGHT TO BE: ETHICAL CONCERNS ON ARCHAEOLOGICAL AND FORENSIC HUMAN REMAINS

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Veiga-Rilo, Clara (CRETUS. Group EcoPast - GI-1553, Area of Archaeology, Department of History, Faculdade de Xeografía e Historia, Universidade de Santiago de Compostela) - Silva-Bessa, Angela (Laboratory of Forensic Anthropology, Centre for Functional Ecology - Science for People & the Planet; Department of Life Sciences, University of Coimbra; Laboratory of Toxicology, UCIBIO - REQUIMTE, Department of Biological Sciences, University of Porto; TOXRUN - Toxicology Research Unit, University Institute of Health Sciences, Advanced Polytechnic and University Cooperative - CESPU) - Colmenares-Prado, Marta (CRETUS. Group EcoPast - GI-1553, Area of Archaeology, Department of History, Faculdade de Xeografía e Historia, Universidade de Santiago de Compostela)

Session format: Regular session

Human remains have always played a fundamental role in the knowledge of human societies, and the ethical concerns regarding the treatment of the former have come a long way. However, there is still room for debate. Currently, experts are still experiencing situations where archaeological human remains are considered mere archaeological material, leaving aside their dimension as individuals. This contrasts with the cognizance of human remnants in the forensic field, whose dimension of humanity is unquestioned. Therefore, the chronological proximity between the living and the dead seems to be a determining feature. Throughout history, measures have been developed to protect the human essence of skeletal remains, despite no universal protocol ever having been established that takes into account a wider chronological and cultural range. The aim of this session is to delve into the ethics surrounding the handling of human remains, bearing in mind the perceptual differences between ancient and modern remains. The session may include presentations on the comparison of the treatment of remains according to their ascribed chronology; research on how the state of preservation of human remains influences the way they are managed (e.g., mummified bodies); studies on the ethics of sampling, methods of analysis and their implications (e.g., facial reconstruction); the

role of the archaeological discipline in cultural appropriation phenomena; and dissemination tools and their impact on experts and laypeople (e.g., public display of human remains). Contributions related to the management of human remains after their recovery and analysis are also welcome. Finally, this session might also embrace legislative differences at an international European level in order to broaden and enrich horizons on the matter.

ABSTRACTS

1 **PATHOLOGICAL BODIES: VISITOR ATTITUDES TOWARDS THE DISPLAY OF HISTORICAL POTTED SPECIMENS AT TWO BRITISH MEDICAL MUSEUMS**

Abstract author(s): Sutton-Butler, Aoife (University of Bradford)

Abstract format: Oral

Across Britain there are institutions which hold collections of anatomical and pathological fluid preserved potted human remains, sometimes referred to as ‘wet specimens’, often collected in dubious circumstances during the 18th and 19th centuries. This paper will present data collected at the Surgeons Hall Museum (Edinburgh) and the Old Operating Theatre Museum and Herb Garrett (London). One hundred and forty visitors were surveyed on the display of these human remains and comments from the visitor’s book were also analysed. Although these collections are still being used in teaching and research, some authors have called them ‘obsolete’ (Lee and Strkalj 2017). Potted specimen collections were the focus of the study for several reasons. They were considered the most valuable type of specimen by anatomists in the 18th century, and they still require a skill set which is not widely specialised in (Moore 2005; Bocaage et al 2013). These collections are also unique in appearance as they have soft tissue attached, despite being a couple of hundred years old. They are different to the archaeological remains on display in museums which are skeletonised or mummified in appearance and are sometimes used to compliment osteology students in the teaching of paleopathology (University of Bradford). The visitor surveys revealed that the public finds these collections interesting, not upsetting, and they often ‘see themselves’ in these collections through shared pathologies. Anatomical and pathological potted specimens of the past have the potential to open up conversations linked to themes such as death, ethics, organ donation, the body on display, the preserved body, and socioeconomic status (Richardson 2006).

2 **THUMBS UP? NEWS READER’S RESPONSES TO REPATRIATIONS OF HUMAN REMAINS AT THE NHM VIENNA AND ITS IMPLICATIONS FOR CITIZEN SCIENCE**

Abstract author(s): Schattke, Constanze (Department of Anthropology, Natural History Museum Vienna; Vienna Doctoral School of Ecology and Evolution) - Ritschard, Elena (Department of Science Communication, Natural History Museum Vienna) - Wieser, Angela - Deiß, Helena (EDUCULT - Institute of Cultural Policy and Cultural Management) - Eggers, Sabine (Department of Anthropology, Natural History Museum Vienna)

Abstract format: Oral

Although Austria never formally held colonies overseas, the Natural History Museum Vienna (NHMW) actively participated in gaining human remains for its collection through colonial-spirited expeditions and private collectors during the 18th to 20th century. Here we explore how this acquisition of human remains and ethnographic objects is commented anonymously and online in an Austrian newspaper with half a million daily readers. This study will highlight the different positions and misconceptions on the topic and elicit what is needed to start working towards a better understanding of museum provenance research through scientific communication. Lastly, it is presented how the NHMW is approaching its human remains collections while simultaneously engaging the public through a citizen science project titled “Colonialism today? What does that have to do with me?”. Here, young students are reflecting on the provenance of selected museal objects and discuss how colonial contexts could be displayed by creating and conducting their own projects.

3 **SENTENCED TO DISPLAY: MUSEUM ETHICS AND THE HUMAN REMAINS OF CRIMINALS**

Abstract author(s): Tarlow, Sarah (School of Archaeology and Ancient History)

Abstract format: Oral

Many of the human remains owned and displayed by European museums belonged to individuals convicted of serious crime. The use of criminal bodies in public anatomy was often part of the post-mortem punishment, as was the denial of normal disposal by interment. Displaying heads or bodies was part, formally or informally of punitive sanctions taken by the state against those who broke its rules. But such display continues into the present day, within museum walls.

The display of bones, skin, hair and sometimes other body parts that were taken from notorious criminals is part of the glamorous grotesque. These are often popular attractions for visitors. But what of the ethics of displaying human remains? After 200 years or more, are these individuals still being punished for their crimes? This short presentation asks whether and how knowing the identity of the criminals from whom human remains were taken affects the de-

cision to display and the kind of display that is appropriate. Should this display of criminal bodies be considered as a punishment, a thrill, an education or a vestige of historical systems of justice?

4 **THE OLD, THE NEW, AND ALL IN BETWEEN: CONSIDERATIONS ON “TIME” AND CHRONOLOGY WHEN HANDLING HUMAN REMAINS**

Abstract author(s): Alves-Cardoso, Francisca (Centro em Rede de Investigação em Antropologia - CRIA)

Abstract format: Oral

This paper explores the concepts of “old” and “new” in relation to human remains. This classification is often in line with legislation related to archaeological works or intrinsically linked with people/communities’ historical and chronological events. For these reasons, human remains display and handling issues are complex and can cause strong emotions depending on the chronology of the remains and their contextual and historical provenance. This paper explores thirty manuscripts addressing the display of human remains and people’s responses to those queries. These were published between 2002 and 2022, mostly in peer review articles and books, and were all written in English, conditioning a worldwide language inclusiveness on the topic. Alongside expressed opinions and the justification for positive/negative reactions to human remains displaying, research will also consider the provenance of the remains under scrutiny, their chronology, and legislation associated with human remains excavation and/or curation. The aim is to incite a debate over the concept of time and whether it is a limitation when considering ethical issues of handling, studying, and displaying human remains. Time sensitivity to human remains is explored beyond communities, and a person’s life expectancy, supporting the view of shared responsibility toward all human remains, viewed as ancestors.

5 **HANDLING LIMINALITY. A SURVEY OF ATTITUDES TO HUMAN REMAINS IN SWEDISH MUSEUMS**

Abstract author(s): Nilsson Stutz, Liv (Linnaeus University)

Abstract format: Oral

Human remains are a complex category situated on a sliding scale between objects of science and lived lives. They are neither one or the other, and at the same time they are both, literally embodying a unique liminal category in museums and in research. For “old” human remains from archaeological or historical contexts, this state of liminality is particularly salient. Traditionally, they were often viewed almost exclusively as human biomaterials or scientific specimens, and while attitudes are different nowadays, the handling of them is still very rarely regulated by legislation, forming a stark contrast to the medical and forensic fields. In recent years, this attitude has become increasingly questioned. Part of the critique emerges in a postcolonial debate, often through the prism of repatriation cases. But, recognition of the complexity of this issue is also embedded within the disciplines themselves, where, like in archaeology, the actual research process centers on the lived lives of people in the past through, for example, osteobiographies. This paper takes as its point of departure the unregulated field of the handling of human remains in museums and research. It presents a study of the handling of human remains in Swedish museums based on a large-scale survey and a series of interviews with museum professionals. The study seeks to go beyond “best practices” and “codes of ethics” to map the everyday practices and attitudes in the handling of human remains and focuses on complexities involved in daily practice, routine, and decision making.

6 **THE MULTIPLE ETHICS OF BIOMOLECULAR RESEARCH ON HUMAN REMAINS: RESEARCHERS’ PERSPECTIVES**

Abstract author(s): Peyroteo Stjerna, Rita (Linnaeus University; Uppsala University; University of Gothenburg; UNIARQ - University of Lisbon) - Nilsson Stutz, Liv (Linnaeus University)

Abstract format: Oral

The development of archaeology as a scientific subject is intertwined with mortuary spaces. As places of commemoration and memory, these can be wonderfully monumental and persist in the landscape for millennia. Striking architecture and material culture have attracted generations of archaeologists, while the human bones, often fragmented and poorly preserved, have remained largely silent in museum collections throughout the world. That was until the third scientific revolution in archaeology. In recent years, the excitement around the development of biomolecular techniques such as stable isotope analyses, proteomics, and the breakthrough of the next generation sequencing of ancient DNA, have revolutionized the field and placed human remains at the centre of the research agenda. This rapid development aggravated a number of already existing challenges and underlined the ethical entanglements of research using human remains in a highly unregulated field.

This study investigates the ethical dimensions of ancient DNA research and other ancient biomolecules, with a particular focus on those requiring destructive sampling of ancient human remains for scientific analysis. The purpose of this research is to identify conscious and unconscious value systems underlying the decision making, from a research

point of view. We conducted individual interviews with researchers and technical staff carrying out biomolecular research on human remains from archaeological, ethnographic, and medical-anthropological collections, to map and analyze the attitudes, rationales and arguments informing practices and choices. This study is part of a larger research project - Ethical Entanglements: The Care for Human Remains in Museums and Research, which seeks to strengthen the competence and awareness, among museum professionals and researchers of the complex ethical dimensions of research and curation of human remains. Here, we present for the first time, the preliminary results of our qualitative data analysis, and aim to find common ground by disentangling multiple perspectives.

7 DEAD OR ALIVE? – HUMAN REMAINS IN DANISH ARCHAEOLOGY

Abstract author(s): Thegen, Ina (Aarhus University)

Abstract format: Oral

In early 21st century Denmark, practices of excavation, curation, and research dealing with ancient and modern human remains are more the result of numerous, disparate historical factors than the reflection of a deliberated, common, and ethical strategy or legislative framework. Whereas indigenous populations and other activists have been driving forces in establishing such frameworks elsewhere, Danish archaeology has experienced strikingly little debate or concern for human remains from non-archaeologists. As a direct result, human remains are at present informally understood as somewhat unproblematic and uncontroversial 'liminal materials' – not really subjective agents, nor really objective, agent-less items. These remains take the role of something or someone, depending on ontology, that has the ability to nudge archaeologists and other professionals to demonstrate a certain kind of reverence, or a subjective kind of 'respect' and 'ethics' – but meanwhile are also reduced to study objects, sampling reservoirs and great eye-catching displays and Facebook advertisements without rights or demands. Concurrently, human remains in Denmark are caught between the traditional structures and interests of developer-funded field archaeology, osteological collections at medical institutions, exhibiting culture-historical museums and research-oriented academic archaeology, as no formal framework is in place to define or delimit their properties, possibilities or associated 'ethics'. The aim of this paper is to provide an insight into the seemingly uncontroversial and unquestioned practices currently established in the Danish archaeological landscape with an emphasis on structural and legislative premises and how they shape and interfere with excavation, curation and research on human remains from an archaeological perspective. The paper is based on the preliminary results of a qualitative survey conducted among the 27 museums with excavation responsibilities in Denmark during the summer of 2022. These insights will be contrasted and problematized in relation to international developments, legislations and initiatives.

8 PLURI-ETHICAL ASPECTS REGARDING OSTEOARCHAEOLOGICAL STUDIES ON FEMALE MONASTIC COMMUNITIES

Abstract author(s): Veiga-Rilo, Clara (CRETUS. Group EcoPast - GI-1553, Area of Archaeology, Department of History, Facultade de Xeografía e Historia, Universidade de Santiago de Compostela) - López-Costas, Olalla (CRETUS. Group EcoPast - GI-1553, Area of Archaeology, Department of History, Facultade de Xeografía e Historia, Universidade de Santiago de Compostela; Archaeological Research Laboratory, Stockholm University, Wallenberglaboratoriet, SE-10691; Laboratorio de Antropología Física, Facultad de Medicina, Universidad de Granada, 18012)

Abstract format: Oral

Chronology and identity are key when considering the most appropriate treatment of archaeological human remains. Both help us to link the remains with the cultural background of the nearest living population. The chronology and the chronological continuity have a bearing on the ability to attribute the dimension of humanity to past populations, blurring over time. Therefore, the study of more current historical populations or those more connected with today society are more likely to create ethical concerns. Some female Christian monastic communities are linked to the present because they remain active since their foundation on the Middle Ages, such as the Order of Saint Clare founded in the 13th century. Identity involves the set of values, beliefs, and customs of the culture of ascription – several identities co-lived in the same society. Religious communities have a defined identity, being the female ones different from the male ones. The archaeological literature reveals a greater effort to study the male than the female ones. However, in areas such as the Iberian Peninsula, female monasteries tend to be preferably located in the center of cities, so their study could create a larger impact on society. Cloistered cleric intrigues us but also the bodies of nuns are often seen as sacred or untouchable. This paper focuses on these ethical aspects of medieval human remains from female Christian (Catholic) monastic Orders in comparison with non-conventual necropoleis. We will discuss, among other, the vision provided by media and social media, and the reburial dilemma using as a vehicular case study the convent of Santa Clara in Pontevedra.

9 ESTABLISHING ETHICAL NORMS FOR ANCIENT HUMAN REMAINS RESEARCH AT THE NATIONAL LEVEL: THE NORWEGIAN MODEL

Abstract author(s): Denham, Sean (Norwegian National Committee for Research Ethics on Human Remains; Museum of Archaeology, University of Stavanger)

Abstract format: Oral

One of the challenges in developing and maintaining ethical norms in ancient human remains research at a national level is establishing who has the responsibility for guiding the process. In Norway, the National Committee for Research Ethics on Human Remains (Human Remains Committee), an interdisciplinary committee under The Norwegian National Research Ethics Committees (ultimately under the Norwegian Ministry of Education and Research), functions as a national resource for the promotion of responsible and ethically sound research in this area. It sets out ethical guidelines, contributes to training and teaching, and provides advice to researchers, research institutions and authorities on both general ethical issues within the field and specific cases/research projects. Although strictly advisory, in practice most Norwegian institutions require that proposed projects be evaluated by the Human Remains Committee before granting access to material.

The Human Remains Committee was established in 2008, initially in response to questions regarding research on human remains from Norway's indigenous group, the Sami, and requests for the repatriation of Sami human remains from national collections. Over time, however, the committee has come to engage with a broad range of topics and ethical dilemmas within the field of ancient human remains research. This talk will present the overall framework within which the committee functions, its guidelines and some case studies illustrating the nature of its work.

10 DOUBLE STANDARDS: ETHICS OF ANATOMICAL DONATION BEFORE AND AFTER DEATH

Abstract author(s): Silva-Bessa, Angela (Laboratory of Forensic Anthropology, Centre for Functional Ecology, University of Coimbra; UCIBIO-REQUIMTE, Laboratory of Toxicology, Faculty of Pharmacy, University of Porto; TOXRUN – Toxicology Research Unit, University Institute of Health Sciences, CESPU) - Dinis-Oliveira, Ricardo (UCIBIO-REQUIMTE, Laboratory of Toxicology, Faculty of Pharmacy, University of Porto; TOXRUN – Toxicology Research Unit, University Institute of Health Sciences, CESPU; Department of Public Health and Forensic Sciences, and Medical Education, Faculty of Medicine, University of Porto; MTG Research and Development Lab) - Forbes, Shari (Department of Chemistry and Biochemistry, University of Windsor) - Ferreira, Maria (Laboratory of Forensic Anthropology, Centre for Functional Ecology, University of Coimbra)

Abstract format: Oral

In Portugal, no one is obliged to be an organ donor. For this reason, in 1994, the Registo Nacional de Não Dadores (RENNDA – National Register of Non-Donors) was established for those who would like to oppose organ and/or tissue donation after death. Therefore, all public and private hospitals, and legal medicine institutes which carry out postmortem collection of organs and tissues must verify the existence of any opposition or restriction to donation contained in the RENNDA database. Afterwards, once an individual is buried at a cemetery, relatives are considered legally responsible for deciding what to do with the remains when exhumed. However, if the graves are not cared for, and the relatives are unreachable after a period of ten years, the legal responsibility passes to cemeteries and their corresponding city halls. Although there is no national register where an individual can affirm their will as to what to do with their remains so long after death, it can be assumed that if someone refuses to be an organ/tissue donor, they might as well refuse to donate their human remnants to osteological collections and scientific research studies. In such circumstances, the dead will not have the final say. Should RENNDA be extended to longer postmortem periods and become accessible to cemetery workers? Or should a distinct national register be established for such situations? Framed in a doctoral project, this communication intends to raise awareness on gaps in the law that may stir relevant ethical concerns.

11 ETHICAL USE OF HUMAN REMAINS FOR RESEARCH AND TEACHING: A BEST PRACTICE RECOMMENDATION

Abstract author(s): Passalacqua, Nicholas (Western Carolina University) - Bartelink, Eric (California State University, Chico) - McQuade, Wendy (UNT Center for Human Identification) - Steadman, Dawnie (University of Tennessee, Knoxville) - Boyd, Donna (Radford University) - Spradley, Kate (Texas State University) - Sauerwein, Kelly (National Institute of Standards and Technology) - Ho, Rane (Onondaga County Center for Forensic Sciences)

Abstract format: Oral

Here we present a best practice recommendation for the use of human skeletal remains in education and research contexts. These recommendations were generated by members of the Anthropology subcommittee of the Organization of Scientific Area Committees for Forensic Science (OSAC). The OSAC is charged with drafting standards and best practice recommendations for the practice of various aspects of forensic science in the United States.

Forensic anthropologists often use curated human skeletal remains for research purposes. Additionally, human skeletal remains are necessary to provide adequate education and training to students and professionals. While many institutions curating large skeletal collections have policies and procedures addressing issues such as informed consent, there are no guidelines for how and when human remains may be used in research and education contexts.

Core principles of this best practice recommendation include: seeking and obtaining appropriate permission(s) (i.e., informed consent) for the use of human remains in forensic anthropological research and/or education, as well as ensuring their proper handling and curation. The guidelines clarify which entities can provide consent based on the remains' origin (donated, unclaimed, or unidentified) and how obtained permissions—in addition to institutional policies and procedures—dictate the ethical use of remains for education or research. Guidance is also provided for the use of information associated with remains (e.g., images, measurements), loaning of remains or associated data, and final disposition of remains.

301 EXOTIC FIBRES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Zuchowska, Marta (University of Warsaw, Faculty of Archaeology) - Klein, Astrid (Leipzig University; Research Centre „Buddhist Murals of Kucha on the Northern Silk Road“)

Session format: Regular session

From ancient times exotic fibres attracted people with their mysterious origin and fascinated with their different textures, colour, weight, or properties to warm or cool. Although textile production was usually based on locally accessible raw materials, which caused a strong regionalism in the development of textile technologies, the phenomenon of fibre trade is already known from early prehistory. Not only silk or cotton was desired and traded, but also special types of wool and other animal fleece.

The recent development of scientific methods in ancient textile research allows for more accurate analysis of fibres and better determination of their origin, opening the field for further research and discussion on the phenomenon of fibre trade and exchange.

We warmly welcome all papers addressing to the methodology of research and analyses of archaeological finds of exotic fibres and their context, as well as more interdisciplinary studies using archaeological, iconographic and written sources from diverse geographic and chronological contexts.

The main topics to be discussed in relation to exotic fibres include, but are not restricted to:

- How can they be determined in archaeological material?
- Are they recognisable in visual art, and how are they represented in iconography?
- How were they used, valued and perceived outside their place of origin?
- Was the influx of exotic fibres related to major geopolitical changes or specific people, and how did it influence local textile technology, economy and dress?

ABSTRACTS

1 IMAGEJ SHAPE ANALYSIS EVALUATION OF TEXTILE PLANT FIBRE CROSS-SECTIONAL AREA AS A CONTRIBUTORY FIBRE DIAGNOSTIC FEATURE

Abstract author(s): Waudby, Denis (University of Bradford)

Abstract format: Oral

Subjective shape descriptions that characterise archaeological artefacts serve to aid their diagnostic interpretation. However, differential personal subjective determinations applied to artifact descriptions can compromise such diagnoses.

In particular, textile plant fibres share similar physical and material properties, which make them difficult to distinguish within the archaeological record. Identification of bast fibres from archaeological textile assemblages is essential to understanding prehistoric material culture and social structures. It has long been recognised that only a small proportion of plant products used in the past are represented in the archaeological record. Evaluation of the description of plant fibre remains illustrates the rarity and fragility of such finds. The principal methods of plant fibre diagnosis are microfibrillar angle (MFA) and the subjective description of cross-sectional shape, as evaluated from microscopic imagery. However, the diagnosis is severely limited by fibre degradation in all but the most beneficial depositional environment. The research programme reports the comparison and contrast of mathematical and ImageJ computation of plant fibre cross-sectional circularity (Ct) to determine their reliability as diagnostic determinants in quantifying subjective shape descriptions.

ImageJ imaging analysis software is becoming used increasingly among a vast array of different disciplines. In this report, the computer-based programme demonstrates the potential for applying particle analysis in determining the plant fibre circularity. Ct, a separative operator, is used to construct a database acquired from a complex of similar shape images. In addition, the work includes a review of the results obtained from previous modern fibre CSA determinations to reflect the suitability of shape analysis to aid plant fibre diagnosis.

2 EXOTIC PROTEOMES: A SURVEY OF UNUSUAL ANIMAL FIBRES IDENTIFIED BY PROTEOMICS

Abstract author(s): Solazzo, Caroline (Smithsonian Institution) - Lee, Boyoung (Korea University) - Phipps, Elena (University of California Los Angeles)

Abstract format: Oral

In the search for unusual protein fibres used in the past, proteomics has risen as a well-suited analytical tool. Fibrous proteins are highly-organized structural proteins forming filaments or sheets, providing strength and resistance; in textiles, they typically include keratin families (hair, wool), and fibroins in silk. Proteomics can be used to identify or confirm the presence of unusual fibres in a yarn, and detect animal fibrous proteins in indeterminate archaeological remains. It is particularly useful when microscopic identification is difficult or impossible due to similarities with other fibres, lack of recognizable features, or the degradation of the textile. To identify fibres, proteomics-based methodologies start by building reference databases of peptidic markers, which can be done by comparison with known or collected reference specimens, peptide matching in public protein database, and de novo sequencing (often needed for exotic species whose genomes are not yet known). This paper will review proteomics methods to identify animal fibres, and present examples of exotic fibres from past and new studies. Among the unusual fibres identified by proteomics are viscacha hair, an extremely fine fibre from the Chinchillidae family used in Precolumbian textiles. We will also present the characterization of silk by proteomics, in particular wild silks and sea silk, a rare protein fibre known as byssus used in luxurious textiles.

- Solazzo et al., “Proteomics and Coast Salish blankets: a tale of shaggy dogs?” *Antiquity* 2011
- Solazzo et al., “Species identification by peptide mass fingerprinting (PMF) in fibre products preserved by association with copper-alloy artefacts”, *Journal of Archaeological Science* 2014
- Solazzo and Phipps. “Chasing the elusive viscacha in Precolumbian textiles at the intersection of art and science”, *Journal of Archaeological Science* 2022
- Lee et al., “Species identification of silks by protein mass spectrometry reveals evidence of wild silk use in antiquity”, *Scientific Reports* 2022

3 FROM „GRASS THAT IS LIKE COCOONS“? - PICTORIAL REPRESENTATION OF RESIST-DYED FABRICS IN KUCHA ON THE NORTHERN SILK ROAD

Abstract author(s): Klein, Astrid (Leipzig University)

Abstract format: Oral

In Kucha, some early Buddhist wall paintings (5th-6th century) show types of a pearl roundel pattern, possibly referring to a fabric that was still “exotic” in the region at the time, but was already depicted in various ways: donors in wide trousers patterned with roundels in pearl nets (Kizil 118), deities in wrap-over skirts with a pattern of small scattered pearl roundels (Kumtura GK21), and sermon scenes in which a hanging with rows of roundels with a double pearl rim cover the Buddha’s seat (Kizil Cave 207). These examples open up a new perspective on the exchange of patterned fabrics in Xinjiang. For contrary to the previous assumption that the pearl roundel is representative of later painting (6th-7th century) and silks, which only reached Kucha under the Göktürks, this talk shows that roundel-patterned fabrics were already present before.

Reconstruction drawings make it clear that these, however, differ iconographically and compositionally from the later representations. This could indicate a different fabric, e.g. resist-dyed cotton. Cotton fabrics were probably imported into Xinjiang from India from the 3rd-4th century, and also produced locally around the 5th-6th century – this is referred to in the Chinese chronicle *Liangshu* (fasc. 54), which still highlights the exotic character of a grass that can be picked and which “is like cocoons with a silk thread that is like hemp.” The painted representation could refer to a particular type of patterned cotton or to a pattern in the technique of resist-dyeing, which was first applied to cotton but later adopted for silk or linen as finds from Xinjiang and Egypt show.

4 „TEXTILES OF THE WESTERN FOREIGNERS“ - WOOL IN ANCIENT AND EARLY MEDIEVAL CHINA

Abstract author(s): Zuchowska, Marta (Faculty of Archaeology, University of Warsaw)

Abstract format: Oral

Wool, along with flax and hemp was one of the main sources of fibre in Eurasia during the ancient and medieval periods. In China, however, it did not gain popularity until modern times, except in the western and northern borderland,

inhabited by the non-Chinese population. Although the traces of sheep breeding are attested already on the neolithic sites in the middle course of the Yellow River, written sources from the early periods attest only the use of sheep hides, but not the processed fibre. The first mention of wool processing techniques in literary sources dates to the 5th century AD. Archaeological and written sources suggest that woollen fabrics were imported to China and used, even by the elites. The aim of this paper is an analysis of the archaeological and written sources in order to understand why and when animal hair started to be used in Chinese textile production, and how wool and woollen fabrics were perceived and valued by Chinese society.

5 ROBES IN CHILDREN'S BURIALS FROM THE 17TH TO 19TH CENTURIES (POLAND)

Abstract author(s): Grupa, Dawid - Jasiak, Krzysztof (Nicolaus Copernicus University in Torun)

Abstract format: Oral

Archaeological investigations carried out in the crypts in the last two decades have provided a large number of silk fabrics found in the grave furnishings of both adults and children. 99% of these are silk fabrics. Linen and woollen fabrics are found very rarely. The knowledge of grave clothing obtained only from the analysis of silk garments has so far been limited and incomplete. In fact, only in the crypts under the presbytery of the Shchuchin church has a full set of grave clothes been found on mummified remains. The Szczuczyn finds fill in the gaps in terms of grave furnishings and clearly indicate the disparity between garments made of silk and linen. The analysis of this material shows that silk fabrics did not exceed 30% of the grave clothing. These figures indicate that grave clothes made of silk fabrics are only a part of it. Dresses, headpieces and sometimes pillowcases were sewn from them. However, the largest number in the tomb collections are the various types of pasamons adorning both silk, wool and linen dresses.

An analysis of the relics of grave clothing obtained from crypts in Poland shows that deceased children of both sexes from wealthy families were dressed in the same way for burial. The most popular form of children's grave robes was a simple cut garment in the form of a long shirt, usually sewn from plain fabrics. Children's clothing was complemented by headdresses decorated similarly to the dresses. The simplicity and versatility of such clothing means that gender differences disappear, making it impossible, or very difficult, to determine the sex of the deceased solely on the basis of their clothing.

302 DYNAMICS OF EARLY AGRICULTURE IN EUROPE AND BEYOND

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Scharl, Silvine (Institute of Prehistoric Archaeology, University of Cologne) - Antolin, Ferran (German Archaeological Institute, Berlin) - Gerling, Claudia (Integrative Prehistory and Archeological Science - IPAS, Basel University)

Session format: Regular session

First evidence for food production in continental Europe dates to the late 7th (Southeast Europe) and the 6th mil. BC (Central and Western Europe). This early agriculture in Europe is regionally very diverse and the spectra of cultivated crops and of domestic animals vary substantially. We can explain this variability by cultural choices and varying environmental conditions (amongst others) but also, for example, by the different ways that the innovation 'agriculture' spread (e.g., in respect to the involvement of local hunter-gatherer groups). Early farming practices, however, were not static and underwent considerable changes and developments in all the regions in the centuries and millennia following its beginning or arrival. Regionally varying – non-linear-evolutionary – processes of standardisation and diversification can be observed.

The session aims at bringing together experts who investigate the dynamics of early agriculture, i.e. the diversity and transformations in food production in the centuries and millennia after its beginning/arrival with a focus on diachronic comparative or synchronic comparative approaches on local, regional or supra-regional levels. We ask about the causes for these dynamics, which can be externally triggered, but can also be caused by internal change. Methodologically, the questions can be explored using archaeological and/or environmental proxies preferentially through quantitative approaches to explore the entanglement of agriculture, environment and lifestyle in early farming societies. Our starting point is the Neolithic period in Europe, but since these questions are not restricted to Neolithic Europe, but concern early agricultural systems on a global scale, we also welcome contributions on other geographic regions

1 DIET AND ANIMAL HUSBANDRY DURING THE NEOLITHIC - LIPID ANALYSIS ON CERAMIC VESSELS FROM THE LOWER RHINE BAY

Abstract author(s): Krewer, Elisabeth (Institute of Prehistoric Archaeology, University of Cologne) - Heim, Christine (Institute of Geology and Mineralogy, University of Cologne) - Scharl, Silvine (Institute of Prehistoric Archaeology, University of Cologne)

Abstract format: Oral

Analysis of organic residues in ceramic vessels can reveal traces of plant and animal residues and thus allow the reconstruction of diet and subsistence strategies in the past, even in the absence of human or animal remains. The Neolithic is a time of massive changes in settlement patterns and agricultural behavior. Organic residue analysis offers the possibility to answer fundamental questions about subsistence strategies in this critical time period.

The PhD project targets well-known Neolithic sites in the Rhineland (especially in the Lower Rhine Bay), which suffer from strong decalcification of the loess soils and poor preservation of animal bones. Hence, inferences about animal husbandry and the reconstruction of diets (meat and milk consumption) based on bone collagen analysis is difficult or even impossible.

Lipid analyses and the stable isotope compositions of animal fats from selected Neolithic pottery (6th-3rd millennium BC) can make a fundamental contribution to understanding the diachronic development of diet and animal husbandry, and here on the introduction of milk. Next to a diachronic perspective the project also aims at a synchronous comparison of settlements located in the center and in the periphery of documented settlement areas. For the central and the peripheral locations of the settlement distribution, vessels from sites of different size, period of occupation and dating were sampled.

First results on the beginning of the Neolithic settlement of the Lower Rhine Bay of the 6th and 5th millennium BC will be presented.

2 DYNAMICS OF EARLY AGRICULTURE REFLECTED IN SETTLEMENT PATTERNS DURING THE 5TH MIL. BCE IN CENTRAL EUROPE

Abstract author(s): Stöcker, Anna - Scharl, Silvine - Suhrbier, Stefan (Institute of Prehistoric Archaeology, University of Cologne)

Abstract format: Oral

During the 5th mil. BCE in Central Europe agricultural practice and techniques are changing and diversifying. At the same time, a transformation of settlement patterns can be documented. The correlation of these processes is investigated in an interdisciplinary research project. In the framework of a landscape archaeology approach the data is analysed on different scales. In our talk we will present first results of our research with a focus on the development of settlements.

On a macroscale, sites from the Rhineland and Northern Bavaria dating to c. 4900-4300 BCE are analysed in terms of the development of settlement patterns and associated environmental conditions such as precipitation, temperature, soil and landscape. Quantitative analyses can show a correlation between some of these conditions and the chronological sequence. In this context, bundles of conditions can be interpreted as an ecological environment (e.g., warmer - wetter - better soil vs. colder - drier - less suitable soil) and provide information about the conditions of agriculture.

Changes will also be analysed on a micro scale by examining the internal structure and architecture of three settlements dating to the period c. 4900-4500 BCE. The structural patterns within these settlements indicate changes in economic activity and the development of architecture implies different social structures. While the settlements of the preceding Linear Pottery Culture show a very uniform structure, with longhouses and surrounding pits working as autonomous economic units that are usually designated to nuclear families, in the following 5th millennium BCE, the settlements display a different relationship between longhouses and pits, as well as other structural elements. We are seeking to understand these changes by analysing the sites, comparing them to contemporaneous as well as later sites in the research area and to connect them to archaeobotanical and -zoological analysis.

3 ANALYSING TRANSFORMATIONS OF CROP CULTIVATION IN THE RHINELAND (GERMANY) DURING THE 5TH MILLENNIUM BCE

Abstract author(s): Zerl, Tanja (Laboratory of Archaeobotany, Department of Prehistoric Archaeology, University of Cologne) - Suhrbier, Stefan (Department of Prehistoric Archaeology, University of Cologne) - Röpke, Astrid (Laboratory of Archaeobotany, Department of Prehistoric Archaeology, University of Cologne)

Abstract format: Oral

During the 5th millennium BCE, a cultural, social and economic change took place in Central Europe which is particularly visible in the farming system. In addition to the expansion of the economic space into less favourable areas, the crop spectrum of the previous Linear Pottery culture was broadened with naked barley and naked wheat. These new cereals made agriculture more complex, but also more flexible in terms of cultivation areas and labour organisation. However, it is still unclear in which way this development took place in the course of the 5th millennium BCE and whether the different cultures and regions varied in this respect.

In order to take a closer look at this transformation of crop cultivation, the archaeobotanical data of a favourable landscape - the Rhineland (North Rhine-Westphalia, Germany) - were examined in more detail. This "Altsiedellandschaft" comprises the fertile loess region west of Cologne and has been continuously settled since the Early Neolithic (from approx. 5300 BCE). Thanks to 60 years of archaeobotanical research, numerous plant assemblages from the various archaeological cultures of the Early (Linear Pottery culture), Middle (Großgartach, Rössen, Bischheim cultures) and Young Neolithic (Michelsberg culture) are available from this region and can be compared with each other.

The aim of this comparison is to understand the changes in agriculture from the 6th to the 4th millennium BCE more precisely. In this regard, multivariate analyses show a statistically significant correlation between the cultural development of the Neolithic and the cultivation of crops. The question is whether there is also a verifiable correlation between environmental data (e.g. temperature, rainfall, water balance, soil). In addition, it should be discussed if a continuous development has taken place or if breaks can be determined.

4 EVALUATING POSSIBLE ENVIRONMENTAL INFLUENCES ON CHANGES IN EARLY FARMING PRACTICES IN NORTHWEST CENTRAL EUROPE BETWEEN 5300 AND 4000 BCE

Abstract author(s): Broich, Manuel - Frank, Thomas (Laboratory of Dendroarchaeology, University of Cologne) - Kaczka, Ryszard (Department of Physical Geography and Geoecology, Charles University) - Westphal, Thorsten (Laboratory of Dendroarchaeology, University of Cologne) - Scharl, Silvine (Department of Prehistoric Archaeology, University of Cologne)

Abstract format: Oral

The Neolithic mode of subsistence reached the fertile loess regions west of the Lower Rhine Basin at about 5300 BCE and is strongly connected to the so-called Linear Pottery Culture (LBK) of the Early Neolithic, lasting till c. 4950 BCE. Half a millennium later, from 4900 BCE onwards, the archaeological record reflects changes in the material culture, in settlement patterns and in the agricultural system (e.g. introduction of new crops). These developments are summarised by the definition of the archaeological cultures of Großgartach, Rössen and Bischheim during the Middle Neolithic (4900-4400 BCE).

In our project we search for answers to the question whether these changes were triggered by natural external factors, summarised as environmental changes in temperature and/or precipitation.

To evaluate possible environmental influences, we use yearly resolved dendrochronological data from mainly subfossil oaks (*Quercus* spp.) of gravel pit activities near the River Weser and wooden archaeological constructions of the Early Neolithic discovered in the Rhineland. Various tree ring properties, like width, stable isotopes ($\delta^{13}C/\delta^{18}O$) in the wood tissue and Blue Intensity values of the latewood are examined in order to draw conclusions about possible environmental changes. These dendrochronological time series are then compared to independent archaeological proxy data to detect potential responses of the early agrarian societies in question to environmental variation and we discuss possible causalities.

Our results show that on the one hand variation of precipitation on a yearly or decadal time scale may have caused LBK societies to construct water wells to cope with dry years or decades. On the other hand we detected in our tree ring width chronology a phase (5100-4400 BCE) of less variable tree ring widths, which corresponds more or less with the archaeologically defined Middle Neolithic (4900-4400 BCE).

5 LAND USE DYNAMICS IN THE WETTERAU REGION FROM THE 6TH TO THE 5TH MILLENNIUM BCE

Abstract author(s): Lindemann, Hannah - Stobbe, Astrid (Goethe-University Frankfurt)

Abstract format: Oral

In the 6th millennium BCE the first farmers and cattle breeders of the Linear Pottery culture in Central Europe settled in favourable areas with fertile soils. Later, in the first half of the 5th millennium BCE, there are signs of an expansion of settlement and economic areas to locations that are less suitable, in particular for arable farming. This includes the use of alluvial areas, but especially of the lower and higher parts of the surrounding mountain ranges. An example of these changes is the favourable lowland of the Wetterau (Hesse, Germany) with the Taunus mountains in the west and the Vogelsberg massif in the east. In the central Wetterau, which is a typical 'Altsiedellandschaft', the first clearings are evident during the Linear Pottery Culture in the second half of the 6th millennium BCE, mainly for the creation of settlement areas and arable land. In the 5th millennium the proportion of open spaces and agricultural activities seems almost unchanged. In the vicinity of the 'Altsiedellandschaft', on the other hand, declining tree pollen proportions and increased values of anthropogenic indicators in the pollen spectrum have only been proven since the Middle Neolithic, especially since the Rössen phase (c. 4630-4380 BCE). By the example of various pollen profiles, the different land use within and on the fringes of the Wetterau will be presented and possible causes for this will be discussed.

6 OPEN YOUR MOUTH AND SHOW ME YOUR TEETH - A ZOOARCHAEOLOGICAL STUDY FROM 5TH MILLENNIUM BCE SITES IN SOUTHERN GERMANY

Abstract author(s): Nolde, Nadine (Institute for Prehistory, University of Cologne; Laboratory for Archaeozoology) - Suhrbier, Stefan (Institute for Prehistory, University of Cologne)

Abstract format: Oral

While the first farmers in Central Europe settled on fertile soils derived from loess in the first half of the 5th millennium BCE (Middle Neolithic), a transition to less attractive areas by an agricultural expansion can be observed. One possible explanation is the specialisation in animal husbandry, which led to a spatial expansion into new pastures. In general, faunal analyses show that the species distribution of domestic animal species depends on the landscape conditions and that abundance varies regionally. In many Middle Neolithic sites, cattle represent more than half of the domestic animal species, but pig, sheep and goat remains have also been found in large numbers under suitable habitat conditions. The palynological record shows a progressive clearing of the forests beyond the former settlements, not only to create new arable land or for timber extraction but also as evidence of an expansion of animal husbandry, accompanied by extensive woodland pasture and intensification of leaf harvesting for fodder. Microscopic traces on the enamel bands of teeth – known as dental microwear – of sheep and goats from different sites in southern Germany indicate that some animals show patterns typical of woodland pasture and/or a diet rich in leafy hay. Others, however, had a phytolith-rich, grass-based diet indicating increased ingestion of abrasive soil particles consumed with the plant cover, and are interpreted as reflecting eroded winter pastures, high stocking densities and/or limited grazing areas for the small ruminants. By including cattle and pigs in this study, we aim to use dental microwear and classical archaeozoological methods to highlight the diversity of different husbandry and dietary practices of livestock from six different southern German sites of the 5th millennium BCE, and to gain an understanding of the complex dynamics of early animal husbandry through a diachronic and synchronic comparison.

7 AN ISOTOPIC VIEW ON THE ECONOMIC DYNAMICS IN NE SWITZERLAND DURING THE NEOLITHIC

Abstract author(s): Gerling, Claudia (University of Basel, Department of Environmental Sciences and Department of Ancient Civilizations) - Antolin, Ferran (German Archaeological Institute, Natural Sciences Division)

Abstract format: Oral

Intensive excavations of and investigations on the Neolithic and Bronze Age wetland sites around the central European Alps during the last decades brought enormous amounts of well-preserved organic materials to light, enabling detailed interdisciplinary studies on settlement chronology, community organisation, and economic strategies. Two major projects focussing on the Lake Zurich region, Switzerland, during the Neolithic period, i.e., ca. 4300-2500 BCE, investigated the dynamics of agriculture and animal management using archaeobotanical and archaeozoological remains.

The analysis of cattle tooth enamel for strontium, carbon, and oxygen and human bone for carbon and nitrogen stable isotope ratios, provided insights into the herding practices of the main domesticated species as well as the role domestic and wild animal products played in the human diet at the time. The application of carbon and nitrogen stable isotope analysis to charred grains enabled a better understanding of changing regimes in crop husbandry.

In this contribution, we present and discuss the results of the two studies, with a special focus on changes over the 2000 years of Neolithic occupation, and put them into the wider context of cultural choices and environmental adaptations related to the economy of the pre-alpine Neolithic wetland sites.

8 TO BE OR NOT TO BE A FARMER - SOME THOUGHTS ON THE NEIGHBOURS OF EARLY FARMERS IN NW-EUROPE

Abstract author(s): Kalis, Arie (Goethe Universität Frankfurt am Main) - Meurers-Balke, Jutta (Universität zu Köln)

Abstract format: Oral

From an archaeobotanical view, neolithization in two adjacent landscapes in NW Europe will be compared for the period 5500 and 3500 BC. The loess landscape between Maastricht and Cologne and the delta area of the Rhine and Meuse adjacent to the north will be discussed.

In the Rhenish loess area, the Neolithic began 5300 BC with the immigration of farmers of the Linear Bandceramic Culture. They brought a fully matured agricultural system from central Europe. The impact of their agricultural activities in the archaeobotanical material is given evidence by charred remains of cultivated plants and pollen diagrams reflecting a woodland manipulation by the farmers and their domesticated animals. The delta area adjacent to the north was inhabited by hunter-gatherers of the Swifterbant Culture. Their activities are archaeobotanically hardly visible.

Ca. 5000 BC, in the middle Neolithic, the agricultural system in the loess area changed. A larger spectrum of cultivated plant species was used. Pollen analysis shows an ongoing manipulation of the woodland stimulating early successional species especially ash. In the delta area, there are still no traces of arable farming but pollen analysis shows first traces of forest manipulation, probably for the benefit of domesticated animals.

The agricultural system changed again 4200 BC. In the loess area, macro remains shows a shift of the cultivated plant spectrum towards summer cereal cultivation. Pollen analysis shows intensified animal husbandry, especially outside the area for arable farming. In the delta area, finds of cultivated plants show that arable farming was now also practiced by the Swifterbant people.

It is our aim to bring a concept that will diachronically and causally connect the above mentioned Neolithization processes in both areas.

9 EVALUATING CAPRINE REMAINS OF THE SWEDISH FUNNEL BEAKER CULTURE THROUGH ZOOMS

Abstract author(s): Sjögren, Karl-Göran (Dep of historical studies, Gothenburg university) - Buckley, Michael (The University of Manchester, Manchester Institute of Biotechnology) - Vretemark, Maria (Västergötlands museum) - Axelsson, Tony (Dep of historical studies, Gothenburg university)

Abstract format: Oral

In northern Europe, the first indications of a Neolithic lifestyle appear around 4000 cal BC from northern Germany up to middle Sweden and south-eastern Norway in an apparently short period of time, largely carried by immigrant populations bringing new species of plants and animals into the region. However, the nature of this domestication “package” is not everywhere the same, whereby both environmental and cultural filters acted on the particular set of species cultivated and bred in different regions. In Neolithic Scandinavia, cattle, pigs and caprines (sheep and goat) are all present in varying proportions, with cattle more prominent in Denmark and pigs more prominent in more northerly areas. However, little is known about the ratio of sheep to goat remains within this region, largely due to difficulties in morphologically separating the two species. In this paper we report the results from ZooMS analysis of 45 sheep/goat bone samples from two recently excavated Funnel Beaker settlements in Karleby, Falbygden, Sweden.

The ZooMS analyses gave a clear and somewhat surprising result: 33 of the samples were classed as sheep, one as deer, and none of them as goat. In all likelihood, goats have not been present at all on these sites. A survey of the literature shows that while small numbers of goats are likely present in Denmark from the Early Neolithic, their presence in Sweden at this time is ambiguous and the few claims merit reassessment. Furthermore, the low numbers in Scandinavia compared to central and southern Europe suggests an overall geographic trend, with decreasing proportions of caprines as well as goats in the north.

EVIDENCE OF AGRICULTURAL DIVERSIFICATION: ARCHAEOBOTANICAL STUDY IN JIANGLIU SITE IN 5000 BP, SHAANXI, NW CHINA

Abstract author(s): Li, Jingbo (Stanford University) - Tian, Duo (Northwest University) - Pei, Xuesong - Wang, Hongying (Shaanxi Academy of Archaeology)

Abstract format: Oral

Yangshao Culture (5000-7000 BP) is one of the most influential Neolithic Cultures in north China, featured by millet agriculture. During this period, the cultural communication network in China has been well established, and as the earliest domesticated crop and staple food in South China, rice appeared in the territory of Yangshao Culture. Jiangliu site is a Neolithic settlement of the late Yangshao Culture in central Shaanxi, Northwest China. Bell-shaped storage pits, pottery kilns, large ring-shaped trenches, and burials, with a large number of artifacts like pottery (amphoras, wide edge basins, etc.), bone tools, and ornaments were discovered. Archaeobotanical flotation results show the macro-remains are dominated by carbonized foxtail millet and broomcorn millet, with a small amount of rice with rachis. A considerable number of weed species that reflect wet and saline-alkali landscapes were also found in the samples. Additionally, the micro-fossils of millet and rice, including phytoliths and starch grains, were recovered from the residue in amphoras. Combined with the data from other sites of Yangshao Culture, we argue that rice, as an exotic crop from the south, was consumed as a supplementary food and used for alcohol brewing. This study provides evidence of agricultural diversification in the period of Yangshao Culture, corresponding with continuous cultural expansion and exchange in Neolithic China.

A. FOOD CHANGE IN THE EARLY AGRICULTURAL INITIATION IN SOUTHEASTERN JAPAN

Abstract author(s): Shiroishi, Tetsuya (Yamagata University) - Shinohara, Kazuhiro (Shizuoka University) - Miyata, Yoshiki (The University Museum, The University of Tokyo)

Abstract format: Poster

The early formation of agricultural society in the Japanese Islands begins around 2,800 years ago. However, it is not a result of natural spontaneous production. The origins of agricultural culture are in the Yangtze River basin in southern China, and Japan is the most eastern part of that region. The rice-based agricultural culture that began in the middle and lower reaches of the Yangtze River developed extensively, mainly in Asia. The route of spread to the Japanese islands is thought to be mostly from the Korean Peninsula to the northern part of Kyushu Island. Later, rice farming culture developed and took root throughout the Japanese islands. In this study, we focus on the southeastern region of the islands of Japan, which stretches from north to south, and use archeological and physico-chemical proxies to examine changes over several hundred years from before the beginning of rice farming to the settlement of rice cultivation. In particular, the pottery will be used as a base to show the current limits of the transformation of early agricultural society from a change in „food“ to an agricultural society. Specifically, the following methods will be used: (1) changes in the location of settlements (environment), (2) changes in excavated artifacts (agricultural tools), and (3) changes in the cooking traces of pottery (use traces and cooking contents) to provide information and discussion that will contribute to the observation of the non-linear transformation process of standardization and diversification that varies from region to region, which is the goal of this session. The session will be held in the following areas.

304 DIFFERENT STORIES FOR DIFFERENT PEOPLE? SHAPING NARRATIVES: FROM INDIVIDUAL RESEARCH SITES TO MAJOR INFRASTRUCTURE PROJECTS

Session theme: 3. Heritage Narratives and Representations

Session organisers: Halsted, John (HS2 Ltd) - Fushiya, Tomomi (University of Warsaw)

Session format: Regular session

Major Infrastructure projects through their sheer scale clearly have the potential to both generate and challenge archaeological narratives. They also have a responsibility to communicate narratives more widely as part of realising the benefits of such extensive programmes of work. This session will focus on the potential ways of communicating archaeological narratives from projects of all sizes, and from long running research excavations such as those at Nea Paphos, Cyprus, to large commercial infrastructure programmes.

There may be much to learn for large scale infrastructure from approaches taken at individual sites and research projects which have focussed on communicating the outcomes of their work to a variety of audiences. From the implementation of the Historic Environment Research and Delivery Strategy on HS2 Phase 1, a number of themes emerge:

- How does fieldwork practice and decision-making influence narratives?
- To what extent do question-led approaches change narratives?
- How are narratives communicated to wider audiences?

- Who are those audiences and which narratives do we choose to present?
- How do we consider less heard voices and ensure we are inclusive?

We invite papers from a range of cultural heritage projects, both small and large scale, that consider how archaeological narratives are generated and how those narratives are communicated more widely. To what extent are different narratives communicated to different audiences and how do we identify the stories we wish to tell? What are the types of communication and dissemination that best reflect results and to what extent do they differ between different types of investigation?? How can dialogue with a range of audiences contribute to the shaping of narratives? To what extent can different delivery mechanisms be used to reach different audiences?

ABSTRACTS

1 BRINGING THE PAST TO LIFE. CASE STUDIES AND IDEAS FOR CONVEYING THE PAST TO DIFFERENT AUDIENCES

Abstract author(s): Waddington, Clive (Archaeological Research Services Ltd)

Abstract format: Oral

This paper will deliver a concise look at case studies from a range of projects undertaken by the author in the UK, from big footprint infrastructure to community projects, that highlight different ways of narrating the past to different audiences, as well as assess their effectiveness. This will include consideration of different types of text, books and storylines through to the use of experiment, 'reconstruction' and wider community articulation of the past such as its inclusion in, for example, contemporary folk music and beer names and labels. Audiences digest the past in different ways with some people preferring written text, some prefer more visual stimulus whereas others prefer hands-on and physical engagement with the past. Digital technology provides a wealth of opportunities for communicating in different ways all across the world and this has opened up ways of communicating the past through a wide variety of formats which are still in their infancy. The paper will conclude with some ideas that could be applied to the Analysis and Publication phases of projects.

2 SHAPING NARRATIVES THROUGH AUDIENCE MAPPING

Abstract author(s): Ruddy, Mary (WSP)

Abstract format: Oral

HS2 is a new UK high-speed railway planned to link London and the Midlands to Manchester. Following years of planning, the construction stage of the Phase One London to Birmingham leg has begun. The preparation 'enabling' works on this vast scheme encompassed a programme of historic environment investigation considered the largest in the UK. The route crosses a fascinating historic landscape that has generated highly significant archaeological investigations and many narratives. The scheme spans numerous places and communities, and the approach embedded by the Historic Environment Research and Delivery Strategy (HERDS) to use heritage for public benefit and to inspire via education is a central tenet. This paper discusses the HERDS framework of principles and overarching aims that could be transferred to other major schemes and sites through discoveries in HS2 Area North (The Midlands). The engagement programme brought together local heritage groups, museums, universities, schools and the public to share and learn through activities such as webinars, YouTube series, exhibitions, schools' workshops, careers films and a new Young Archaeologists Club. Engagement can deliver different stories for different people, but this relies on understanding target audiences and early and sustained engagement to enhance relevance. Narratives should take shape around community interests, welcome interaction and adapt mode and style, rather than taking a broadcast media approach. For coherence in large-scale infrastructure, Audience Development and Activity Planning need joining up at project level. Drawing on expertise from sister professions for audience mapping, quantifying impact and measuring social value could be a valuable tactic for commercial and research archaeology.

3 SELECTING SITES AND TELLING STORIES: HOW FIELDWORK PRACTICE CAN INFLUENCE ARCHAEOLOGICAL NARRATIVES. HS2 PHASE ONE, UK

Abstract author(s): Halsted, John (HS2 Ltd)

Abstract format: Oral

The interpretation of our investigations into the past, whether that be the chronological development of a site, the activities of its inhabitants or the environment in which they lived, culminate in the formation of archaeological narratives. These may take the form of a discussion in an archaeological report, a conference presentation, a story in the media or educational activities. The narratives we develop as a result of archaeological fieldwork are directly influenced by the methodologies we employ. On a large-scale project such as HS2 Phase One, those methodologies can include a variety of survey and sampling strategies culminating in the selection of specific locations for further investigation.

The methodology and decision-making process has been influenced by the Specific Objectives as set out in the Historic Environment Research and Delivery Strategy (HERDS). The narratives produced will be generated for both academic historic environment audiences and the wider public, including local communities and school children. This paper will examine the types of narratives and stories that are produced for different audiences and consider which themes are chosen and the extent to which those are influenced by the research questions we have set out. Any lessons learnt from the approaches taken will be considered.

4 THE BROTHEL OF LATE ANTIQUE ASCALON: A FALSE NARRATIVE AND ITS CONSEQUENCES

Abstract author(s): Ehrlich, Simeon (Fulbright U.S. Scholar Program; The Hebrew University of Jerusalem -The Institute of Archaeology)

Abstract format: Oral

Excavations at the Romano-Byzantine port of Ascalon in the 1980s and 1990s uncovered a series of scandalous discoveries: a pool with an inscription beckoning passersby to “enter, enjoy, and...”, a cache of lamps with erotic scenes, and the bones of 100 infants in the sewer beneath. Initial academic publications were tempered, offering matter-of-fact descriptions of the finds, and downplaying any interpretations not fully substantiated by the material remains. Public-facing communications showed no such restraint: the excavators had found a brothel and the unwanted children of the prostitutes who worked within.

This sensationalized narrative took hold in the popular imagination and left its mark in a variety of print and visual media. In time, it came to influence scholarship as well, both that about Ascalon itself and that about other sites for which Ascalon was used as comparandum. Yet, recent research shows that the brothel narrative is entirely false, being based on misinterpretations, insinuations, and exaggerations, and having no basis in a culturally-aware understanding of the excavated material.

This paper is about the challenges of public engagement and the dangers inherent in prioritizing mass appeal over scholarly rigor. It argues that the benefits of short-term boosts in public interest are heavily outweighed by the costs of achieving correctives to false narratives that propagate among the public.

The fact that public communications do not undergo the same sort of rigorous peer review as academic publications means that scholars must take extra care to avoid making aggrandized or unsubstantiated claims that will go unchallenged.

5 THE RESTORATION OF ARCHAEOLOGICAL SITES, NEW NARRATIVES AND OLD PERCEPTIONS: THE CASE OF SPARTA

Abstract author(s): Giannakaki, Charikleia (Greek Ministry of Culture and Sports, Ephorate of Antiquities of Lakonia)

Abstract format: Oral

Sparta is an emblematic city-state of ancient Greece, with an important and distinct historical footprint due to its involvement in major events of ancient Greek history, as documented in many ancient sources, but also because of the „peculiarities“ attributed to the constitution and life of the classical city. This approach is already evident in ancient written sources, which chose narratives that presented Sparta as a national and patriotic model of severity, discipline and austerity. Over time, these narratives have fascinated heterogeneous groups of audiences and were often exploited for ideological and political purposes, as in the case of Nazi Germany, where Sparta emerged as an important model for the domination of National Socialists and for an education based on racial ideology. Having survived to the present day they are even revived in contemporary popular culture, as in the Hollywood film „300“. At the local level, they affected the features of the society and the expectations of the visitors and the scholars of Sparta. Major projects for the restoration of archaeological sites in the area were systematically implemented rather late, in the late 20th and early 21st century. In addition to the presentation of these projects, the proposed paper will focus on the case of Sparta by discussing the ways in which an organized and accessible archaeological site and the narratives it communicates could reach different audiences and thereby lead to the revision of established perceptions that affect the local identity, the evolution of the region and the interaction with its visitors.

WEAVING AND WEARING NARRATIVES OF IDENTITY. PRODUCTION, TRADE, AND CONSUMPTION OF TEXTILES AND PERSONAL JEWELLERY AS MARKERS OF IDENTITIES [COMTEX]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Longhitano, Gabriella (University of Catania) - Dickey, Alistair (Independent Archaeologist) - Muti, Giulia (Cyprus American Archaeological Research Institute - CAARI) - Hitchens, Sarah (University of Liverpool)

Session format: Regular session

In the ancient Mediterranean, people engaged in the production, trade, and consumption of a vast array of staple and luxury goods. The well-known case of the Phoenicians, who were both skilled producers and large-scale traders of many goods (i.e., ivory artefacts, metals, textiles, etc.), is a paradigmatic example of how production and trade could be formative aspects of social identity. In parallel, the consumption of valuable Phoenician products across the Mediterranean was a means of self-representation, cultural affiliation, and embodiment of specific social values.

The relationship between crafting and/or product consumption and social identity is particularly evident when it comes to textiles. Over the last 20 years, scholars have reflected on how social groups used textiles to forge, embody, and convey different identities, including cultural/ethnic ones. Nevertheless, this is not exclusive to textile production. Other ancient crafts show a similar entanglement between the producers, traders, and consumers. For instance, possessing and wearing jewellery was closely connected to identity and thereby a potential means through which individual and social identity could be expressed. At the same time, producing jewellery (i.e., pins, fibulae, necklaces, rings, etc.) or other kinds of artefacts to be worn (i.e., weapons) would have given the craftspeople a certain role in society, enabling them to build a work-related identity.

This interdisciplinary session wishes to bring together contributions with the main focus on all goods to be worn (textiles, jewellery, and weapons) through which social identity could be shaped and expressed. We welcome papers covering the period from prehistory to 1000 CE across the wider Mediterranean and Europe. The goal is to stimulate a broad discussion on the materiality and materialisation of ancient identities through the 'production-exchange-consumption' paradigm of these specific goods.

ABSTRACTS

1 AN INTRODUCTION TO „WEAVING AND WEARING NARRATIVES OF IDENTITY“

Abstract author(s): Muti, Giulia (Cyprus American Archaeological Research Institute - CAARI) - Longhitano, Gabriella (Università degli Studi di Catania) - Dickey, Alistair (Independent archaeologist) - Hitchens, Sarah (University of Liverpool)

Abstract format: Oral

This presentation serves as an introduction to the session topic. Its aim is to guide the attendees through the papers presented and provide them with a background on the main concepts discussed. Specifically, we intend to briefly unpack the themes and theoretical concepts behind the Session, which revolves around the relationship between the production, trade and consumption of artefacts that can be worn or are in close contact with the human body as agents or creators of social identity. We will draw attention to some of the main controversies that have shaped the debate during the last decades around the concept of identity and the importance of a more interdisciplinary approach in dealing with it.

Engaging with a variety of materials – from ornaments to textiles – we will stress how these different pieces of evidence, coming from research on new materials or re-analysis of past excavations, interact with and complement others to enhance our understanding of social identity in ancient times. Then, the general structure of the Session is explained and the single contributions are introduced. In this regard, the introduction offers the perfect occasion to mention the periods and areas touched by the presentations within the Session's wide region and chronological framework.

2 ELEMENTS OF IDENTITY TO BE WORN: DRESS ORNAMENTS AMONG THE VIII-VI C. BC COMMUNITIES IN SICILY

Abstract author(s): Longhitano, Gabriella (University of Catania)

Abstract format: Oral

Specific types of metal dress ornaments and fibulae have been traditionally considered as distinctive elements of material culture among the VIII-VI c. BC communities in Sicily.

This paper focuses on the analysis of two funerary contexts chosen as paradigmatic examples of the hybrid cultural context characterising Sicily between the VIII-VI c. BC. These are two well-known sites, which have been long studied to understand a crucial period of Sicilian archaeology.

A detailed analysis of metal ornaments adorning garments of dead and their position on the body for the first time has made it possible the interpretation of their original function and the reconstruct of the kind of garments worn. The comparison between different times and contexts shows that new luxury ornaments were adopted by local communities, likely coming from the cultural interaction with Greek people settled on the island from the end of VIII c. BC. However, the local tradition of fastening and adorning garments appears to continue in contrast to the Greek tradition. Through the analysis, we will question: who was using and wearing which type of fibulae or other kind of ornaments? who was adopting new ornaments and/or new dress?

This study on how garments were fastened, worn and adorned will shed light on the social complexity of local society and how identity was expressed through types of garment and textile ornaments.

3 JEWELLERY FASHION IN THE GREEK COLONIES

Abstract author(s): Liveri, Angeliki (Greek Ministry of Education and Religious Affairs)

Abstract format: Oral

This paper presents gold jewellery in Greek style, which was found as burial offerings in the Greek colonies of South Italy (e.g., Taras) and of the Northern Black Sea (Crimea and Taman peninsulae), focusing on diadems, earrings and necklaces dated in the 4th century BCE. We aim to demonstrate the iconographic and stylistic similarities and differences between artefacts of these regions and similar pieces unearthed in Metropolitan Greece. We will address the following topics: The creators of these artefacts followed the Greek Jewellery tradition or they also created new works according to the time trends and depending on the customers taste? Whether this Greek jewellery style was worn by members of the respective local Greek society, constituting a characteristic of national identity and differentiation from other “barbarian” inhabitants of the colony. If non-Greek residents followed this fashion? We will also attempt to identify the social-economic status of the jewellery owners and if the creators of these pieces were travelling Greek craftsmen or they were produced by permanent workshops situated in specific areas.

4 SPINNING ON FEMALE IDENTITY IN THE IBERIAN CULTURE

Abstract author(s): Rosell Garrido, Patricia (University of Alicante)

Abstract format: Oral

As Ephorus (F. H. G., III, 456) already mentioned, during the 5th century BC, the Iberian communities celebrated an annual festival dedicated to textiles, in which the women wove their garments in order to make the winner the one with the best textile piece and, therefore, the best weaving skills. Thus, this activity, which was originally carried out for the maintenance and self-consumption of the family, reached a high level of importance for Iberian Culture. However, its importance lay not only in the quality of the textile products, but also in the techniques, their uses and functions as well as their economic weight, becoming one of the main handicraft production manufactures developed by these Iberian groups.

Thus, the study and review of the archaeological remains, dwellings and iconography allow us to identify this work as one of the main tasks that define the female sphere of Iberian culture and underpin the identity of Iberian women. In turn, a detailed analysis allows us to understand its importance from a socio-economic perspective for the group, the type of resulting pieces, how they could be worn, similarities and differences in their attire with respect to other groups of Mediterranean Antiquity and to differentiate the young-adolescent and adult-mature female agents and their social rank, where even jewelry and hairstyle come into play. In short, the spinning of a whole narrative in which the gender-feminist reading of the textile presents it as a basic piece for an adequate interpretation of the social role of Iberian women.

5 YOU ARE WHAT YOU WEAR FROM YOUR FEET TO YOUR HAIR: ADORNMENT AS IDENTITY IN LATE ANTIQUE BURIALS IN EGYPT

Abstract author(s): South, Kristin (Fag el-Gamus Excavation)

Abstract format: Oral

The practice of mummification in Egypt involved the use of multiple wrapped layers of linen in addition to inclusions of jewelry and amulets to display wealth and social identity. By the early Roman era, coincident with and related to the rise of Christianity, a newer form of burial appeared. These burials continued to use linen wrappings but could now also include clothing to be worn in death as it had been in life. Together with jewelry and other inclusions, these materials could express age, gender, wealth, and social identities. Taking the necropolis of Fag el-Gamus in Egypt's Fayum as an example, this paper examines a range of consumables that were considered important (or unimportant!) enough

to accompany a person into the afterlife. The presence – and sometimes equally telling, the absence – of clothing, jewelry, head and foot wear, and objects of daily life can provide modern interpreters with a glimpse into how ancient identities interacted with material objects.

6 FASHIONING IDENTITIES ALONG THE MIDDLE NILE. LOINCLOTH OUTFITS IN LATE ANTIQUE AND EARLY MEDIEVAL SUDAN (C. 100 – 800 CE)

Abstract author(s): Yvanez, Elsa - Wozniak, Magdalena (University of Copenhagen)

Abstract format: Oral

The arid climate of the Middle Nile valley has guaranteed the preservation of a very large body of archaeological textiles dated to the Late Antique and Medieval periods. In Sudan and Nubia, this time marks the transition between the ancient Kushite Meroitic kingdom and the Christian Makurian kingdom (c. 100 – 800 CE). Usually found in funerary contexts to dress, wrap, or support the dead, textiles are closely related to the individuals and communities who used and reused them. They can also be compared with many iconographic representations of dressed people, leading to the reconstruction of garment types and assemblages. Paired with the study of their archaeological and historical contexts of use and discard, ancient Sudanese textiles offer the precious opportunity to analyze different narratives of identity. This is the aim of the newly started project Fashioning Sudan. Archaeology of dress along the Middle Nile (ERC 101039416).

While this presentation will first introduce the project as a whole, it will also question different approaches to the study of identities in clothing artefacts. How can we, as archaeologists, recognize tenets of ‘identity’ in garments? How did past populations craft their identities through the manufacture of their garments? In addition, how did clothing help them perform these identities during life and death? These questions will be explored through the study of a specific type of male outfit, composed of a loincloth and apron or belt. Attested by many iterations and developments of similar specimens through time and space, this outfit helped fashioning the identity of a very specific group of the ancient population.

7 ALL THAT GLITTERS AIN'T GOLD: JEWELLERY AND DRESS ORNAMENTS AS IDENTITY MARKERS IN AVAR-PERIOD (7TH-8TH CENTURY AD) FUNERARY CONTEXTS

Abstract author(s): Bühler, Birgit (Vienna Institute for Archaeological Science - VIAS, University of Vienna)

Abstract format: Oral

The material culture of the Avar empire (7th-8th century AD) in the Carpathian Basin, in particular the jewellery and dress ornaments, demonstrates processes of cultural transfer, integration and assimilation with the Byzantine Empire, but also with other adjacent cultures. In particular, a tendency to display status via Byzantine-type products in Avar society, especially dress ornaments and jewellery, has been noted by many researchers. Significantly, jewellery and dress ornaments from Avar-period funerary contexts were produced using a wide range of precious metal alloys and their „imitations”: For example, a product which appears to be made of silver, may in fact be a high-tin copper alloy, or exhibit a tinned surface. Such observations can, for example, be evidence for personal mobility and for technology transfer. Archaeometallurgical data and technological observations are also relevant for studying socio-economic status: However, we should beware of simplistic hierarchies based on the (modern) material value of metals: Gold, silver, bronze, and so on. The choice of materials and techniques is determined by a variety of different aspects: We should consider not only the goldsmiths but also their customers and cultural environments. Hence, research at the interface between early medieval burial customs, material culture (especially dress ornaments and jewellery), metalworking techniques and metal composition seems particularly promising, focusing on questions such as: Who is using and/or wearing which type of product? Previous archaeological and osteological research provides evidence for the existence of intercategory social complexity in mortuary contexts of the Avar period: Social categories may intersect and therefore should not be analysed separately. As will be discussed in this paper, using case studies, interdisciplinary co-operation will be crucial for investigating intercategory social complexity in Avar-period funerary contexts.

8 OLD SCRAP FOR NEW IDENTITIES – ROMAN OBJECTS AS JEWELLERY COMPONENTS IN ANGLO-SAXON FEMALE DRESS, 5TH TO 7TH CENTURIES AD

Abstract author(s): Werthmann-Carroll, Indra (Durham University)

Abstract format: Oral

Reused Roman objects in Anglo-Saxon graves have been frequently discussed in the past and interpreted as chance finds originating from a collapsed Roman economy or as apotropaic items rather than being integral parts of Anglo-Saxon dress. Metalwork such as coins, brooches and belt buckles were used as jewellery components in a low number of predominantly female burials across Anglo-Saxon graves in Kent and East Anglia. However, the consist-

ency of the type of finds and care taken to curate them evidenced by use wear suggests that these antiques held a deeper meaning for their wearer than its intrinsic value. Objects are tied to people and transformed through their use and reuse in time, creating their own life histories while also becoming integral parts of their owner's biographies. This paper will discuss the meaning of Roman objects as jewellery components in Anglo-Saxon dress and its significance to shape the identity of the wearer; it will shed light on whether these antiques were used for economic reasons, as symbols for a Roman past or by its reuse, take on completely new meanings as markers for unique individuals in Anglo-Saxon communities.

306 MULTIPROXY GEOARCHAEOLOGY TO UNDERSTAND HUMAN-ENVIRONMENTAL INTERACTIONS FROM LOCAL TO GLOBAL CHANGES

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Marras, Gian (University of Cambridge) - Kristiansen, Søren (Institute for Geoscience - Aarhus University; iCLIMATE Aarhus University Interdisciplinary Centre for Climate Change; Institut for Kultur og Samfund - Centre for Urban Network Evolutions - UrbNet)

Session format: Regular session

Palaeoenvironmental studies have demonstrated that our planet during the last 11,700 years has been punctuated by tremendous changes in local and regional ecosystems. This was characterised by significant variability not only in terms of intensity and chronology but also of the underlying forcing mechanisms. Understanding these variations on a regional scale has often been tackled by studies focused on the vegetation history inferred from fossil pollen sequences from single sedimentary archives, and correlating the environmental changes with variations in past climate conditions.

However, increasing geomorphodynamics evidence and soil formation-erosion phases highlight the role of past human societies in driving cross-latitude landscape changes since the Early Holocene on several continents. Furthermore, the use of multi-proxy analysis (e.g. geochemistry, soil micromorphology, isotope analysis, a.o.) of archaeological and sedimentary deposits to reconstruct past climate conditions and understand past human impact is still largely underrepresented within palaeoenvironmental research. As an example, how can the integrated approach of geoarchaeological and geochemical techniques help unfold the forcing mechanisms of Holocene environmental change at a local scale? How can the combined investigation of archaeological sites and sedimentary archives at larger scale refine current narratives of environmental change at a local to regional scale? Can a geoarchaeological multiproxy site-based approach provide relevant insight into human-climate-environmental interactions?

For this session, we would like to invite works that have followed innovative multidisciplinary approaches to disentangle the cause and mechanisms of past environmental changes or human-environmental responses. In particular, we wish to discuss the potential of combining pollen, other bioarchaeological methods, soil micromorphological, isotope approaches, and geochemical analysis from archaeological sites and sedimentary deposits from sites around the world and from polar to tropical environments.

ABSTRACTS

1 A COMBINED PALAEOECOLOGICAL AND GEOCHEMICAL APPROACH TO IDENTIFYING PAST HUMAN RESPONSES TO CLIMATE CHANGE IN THE PERUVIAN ANDES

Abstract author(s): Handley, Josie - Branch, Nicholas (University of Reading) - Farfan, Carlos (Universidad Nacional Federico Villareal)

Abstract format: Oral

Despite the growing number of high-resolution palaeoclimate records for Peru from lake, cave (speleothems), ice, and marine records, there remains a paucity of palaeoenvironmental data documenting changing human-environment interactions, especially from wetlands proximal to areas of intensive human activity. The analysis of wetland records located within a key life-zone of the Peruvian Andes (3000-4000m a.s.l.), provide valuable records of past socio-economic responses to environmental and climatic changes. Pre-Hispanic societies seemingly adapted in response to periods of known climate change during the Late Holocene, through the construction of water storage and transportation networks (reservoirs, canals and water catchment features) and by adapting agricultural practices (construction of terraces, multi-cropping, and agroforestry), and in doing so were able to endure variabilities in natural resources. The results of our new multi-proxy study using palaeoecological analysis (pollen) in combination with sediment geochemistry (micro-XRF ITRAX analysis) from a wetland site (Antaycocha) within the Chillón Valley, Peru, reveal how Late Holocene human societies modified the landscape to mitigate against the impacts of climate change. More specifically, the community around the site of Antaycocha constructed a dam wall to allow water to build up

within what was once a natural basin, the timing of which coincided with a period of increased precipitation during the Little Ice Age. The construction of a reservoir would have ensured the success of agro-pastoral communities within the surrounding landscape associated with the near-by archaeological site of Cantamarca. The results of this study have highlighted a novel approach to dating an archaeological structure (the dam wall) using paleoenvironmental analysis, which would otherwise be difficult to precisely date, and allow us to better assess societal responses to climate change. Consequently, these records can also act as an analogue for the possible impact of current and projected climate change within the highly sensitive Peruvian Andes.

2 RECONSTRUCTING CARIBBEAN PALAEOENVIRONMENTS: A NEW PATH

Abstract author(s): Pilgrim, Chike (Department of Archaeology, University of Cambridge)

Abstract format: Oral

This paper concerns the landscape historical ecology of Trinidad and Tobago during the early to mid-Holocene and its relationship to the active settlement of the island during the same period. It has often been the case that palaeoenvironmental reconstructions and historical ecologies are made possible through the analysis of pollen and phytoliths from soil and sediment cores, and indeed my fieldwork has meant obtaining soil and sediment cores extensively from both Archaic sites and wetlands across Trinidad and Tobago.

However, preceding this pollen analysis can be other very useful lab-work, such as the preparation of portions of soil cores into thin section slides and the micro-morphological analysis of these slides. Electrical Conductivity, pH tests, and particle size tests on soil from these sites may also be compared, not only to previous geochemical tests around the islands, but also to data from micro-morphological study, and to future data provided by the analysis of pollen and phytoliths from sediment cores.

This paper therefore aims to illustrate how significant palaeoenvironmental information in the Caribbean might be produced from geochemical study and soil micro-morphology, and how this might provide a basis for palaeoenvironmental reconstructions and of historical ecologies in the region. This may be accomplished even in the absence of more traditional methods of palaeoenvironmental analysis, namely the examination of sediment cores and their cache of pollen and non-pollen palynomorphs.

3 A MULTISCALE APPROACH TO UNDERSTANDING PALAEO-LANDSCAPES AND HUMAN-ENVIRONMENT INTERACTIONS IN SOUTHEASTERN NIGERIA C.800-1200 CE

Abstract author(s): Daraojimba, Kingsley (University of Cambridge; University of Nigeria Nsukka)

Abstract format: Oral

Geoarchaeology has been transforming our understanding of human-environment interactions across tropical environments, revealing new histories of human landscapes and social complexity. West African environments remain somewhat peripheral to these developments, despite a rich archaeological record. This paper presents the results of new dataset at Igbo-Ukwu, southern Nigeria's earliest complex society dating to the early first millennium CE. Whilst Igbo-Ukwu is world-famous for returning some of the finest intricately crafted metal objects and rich material culture in West Africa, little is known about the environmental settings sustaining such developments. Recent work at Igbo-Ukwu, integrating landscape-scale geoarchaeological survey, soil micromorphological and palynological analyses has produced the first records of buried soils and archaeological sediments. Our integrated multiscale approach has enabled the recovery and correlations of environmental and anthropic records across Igbo-Ukwu's cultural landscape, while also showing the relevance and feasibility of examining buried soil sequence to understand human-environmental interplay in tropical West Africa.

4 MAPPING PAST INTEGRATED WATER SYSTEMS: MULTISCALAR APPROACHES TO GREAT ZIMBABWE'S URBAN LANDSCAPE

Abstract author(s): Kristiansen, Søren (Department of Geoscience, Aarhus University; Center of Urban Network Evolution - UrbNet, Department of Culture and Society, Aarhus University) - Pikirayi, Innocent (Department of Anthropology, Archaeology and Development Studies, University of Pretoria) - Sagiya, Munyaradzi (Department of Culture and Heritage Studies, Bindura University of Science Education) - Stott, David (Moesgaard Museum, Højbjerg) - Sulas, Federica (McDonald Institute for Archaeological Research, University of Cambridge)

Abstract format: Oral

Integrating remote sensing, geoarchaeological and historical records, new research has revealed the presence of an integrated water management system supporting Great Zimbabwe, centre of southern Africa's earliest state society. Geoarchaeological field investigations and laboratory analysis first mapped past and present water sources within and around the main urban area, detecting the presence of large water reservoirs next to elite residential complexes. Next, spatial analysis, combining LiDAR survey and hydrological modelling, revealed the extent and distribution of

other large water reservoirs within and surrounding the ancient urban settlement. These reservoirs have been used by the inhabitants of Great Zimbabwe for water storage and harvesting for a long time, possibly since the development of the ancient settlement in the mid-second millennium CE. The reservoirs were part of a landscape-scale water management system that exploited catchment hydrology and groundwater by means of artificial reservoirs, wells and springs to secure water for subsistence, spiritual services, and crops. Understanding past water management in such a water-scarce region is not only important for reconstructing how the ancient Great Zimbabwe urban society negotiated water security, but also contemporary human-environmental challenges around the same.

5 ASSESSING HUMAN IMPACT ON DUTCH WADDEN SEA SALT-MARSH LANDSCAPES BEYOND TERP MOUNDS BETWEEN 650 BC AND AD 800

Abstract author(s): Schepers, Mans (University of Groningen) - Pierik, Harm Jan - Feiken, Rik (Cultural Heritage Agency of the Netherlands) - Nicolay, Johan - Bakker, Marco (University of Groningen)

Abstract format: Oral

From around 650 BC people started colonizing the salt marshes along the Wadden Sea coast of the present Netherlands. Because these marshes were subject to flooding, people lived on terps (artificial dwelling mounds). Salt-marsh ridges and tidal-fluvial natural levees with a top soil mainly consisting of sandy clay dominated the land. In between them lower floodplains were present with a more clayey top soil. On the southern fringe of the salt-marsh area, a dynamic transition existed from clayey to increasingly more peaty soil.

Early research in the area focused on the terps proper. Extensive archaeological research over the past decades in the immediate vicinity of the terp has shown that humans also severely impacted the surrounding landscape as well, e.g. by digging ditches and constructing (summer) dikes. So far, human activities at larger distance from the terps received little attention. Recent studies however, show that various activities affected these areas as well, thus testifying to more profound landscape impact than previously thought.

To expand our understanding of off-site activities in a salt-marsh area, we will combine data from excavations, soil coring, digital elevation maps, and palaeoecological analyses. Special attention is paid to diversity in geomorphological and soil units within the area, and their relation to the variety of human activities. With respect to the peat, and clay-on-peat areas in particular, we will also discuss how human actions altered these areas as a result of reclaiming and agricultural exploitation.

We will present first results and plans for the near future. We will also highlight some unknowns and pitfalls we have identified so far. Finally, we will place this subject in a wider debate regarding the substantial human impact on the Dutch lowlands, which is still affecting the living conditions in this area up to today.

6 GEOCHRONOLOGY OF ANTHROPOGENIC LANDSCAPE TRANSFORMATION DURING THE LATE MIDDLE HOLOCENE IN NORTH-CENTRAL SARDINIA

Abstract author(s): Marras, Gian Battista (Department of Archaeology, University of Cambridge) - Robin, Guillaume (School of History, Classics and Archaeology, University of Edinburgh)

Abstract format: Oral

Multidisciplinary palaeoenvironmental research has highlighted profound changes in the vegetation and climate history of the Mediterranean region in the Middle Holocene. However, the timing and extent of human contribution to palaeoenvironmental change remain poorly understood. New evidence from Sardinia shows geochronological correlations between settlement dynamics, geomorphological and soil processes that expose correspondences and discrepancies between large-scale regional patterns across the Mediterranean basin and localised responses.

Geoarchaeological investigations in the uplands of Punta Ferulosu, in northern-central Sardinia, exposed palaeosols and hillwash deposits associated with Copper Age (ca. 5500 – 4200 years BP) settlement. Geochronological, geochemical, and micromorphological analysis of palaeosols and archaeological sediments established new cultural-environmental sequences of soil disruption following the emergence of settlement, reconfiguring the landscape to a point of no return. This finding informs into Middle Holocene human-environmental interactions providing one of the first geochronological evidence of anthropic impact on the island and broadening the knowledge of the past interplay between humans, climate, and environment in the Mediterranean region.

7 "SUBAQUATIC BEING": REPOPULATING WETLANDS WITH MESOLITHIC ENVIRONMENT-HUMAN INTERACTIONS USING PALYNOLOGY, SEDDNA AND MICROSCOPIC CHARCOAL ANALYSIS (DAGSMOSSE, SWEDEN)

Abstract author(s): Blaesild, Paulina (University of Gothenburg)

Abstract format: Oral

Wetlands and humans have, in various exploitive and non-exploitive ways, been connected to one another throughout (pre)history. In a Northern European context, evidence of bog dwelling—that is, the concept of settling down at sites located in the midst of an active fenland, on naturally occurring consoles of decomposing reed or in reed and sedge belts surrounding nutritious lakes—during the Mesolithic was discovered in modern-day Baltic and southern Scandinavia during the 20th century. However, later findings have shown a wider spread of this phenomenon. The discovery of multiple well-preserved Mesolithic sites within the wetland complex Dagsmosse in Östergötland, Sweden, contest previous notions of a Mesolithic blank spot around the Middle Swedish lakes and hinterlands. Materials retrieved from the Middle Mesolithic bog dwelling site Jussberg depict a wide variety of faunal representation, ecofacts, archaeobotanical materials to environmental proxies, fishing equipment, portable weir basketries, stationary constructions and vast quantities of food preparation or production residues. The purpose of this PhD project, in conjunction with the ongoing excavations at site Jussberg, has been to construct high-resolution models of vegetation development and environmental changes at Dagsmosse during the early Holocene, to further expand the understanding of human/wetland interplay during the Mesolithic. This presentation will regard ongoing research and attempts in combining palynological analyses of multiple sedimentary cores with sedDNA data, microscopic charcoal analysis and lithological studies to detect place-specific and local variations in (modest) taxa succession—rather than tending to clearly marked and general trends in the often highlighted arboreal pollen dataset. Adapting to contemporary research strand describing hunting-gathering-fishing lifeways as constituted by a knowledge-based sensitivity towards the ecological systems they live in, by and through, this project aims at locating alternative perspectives and interpretations of pollen-diagrams-with-humans in environments with highly integrated agents.

8 POLLEN INDICATORS OF SLASH-AND-BURN AGRICULTURE IN BURIED SOILS AND PEATLANDS: A CASE STUDY OF MOSCOW REGION (RUSSIA)

Abstract author(s): Ershova, Ekaterina (-) - Ponomarenko, Elena (University of Ottawa)

Abstract format: Oral

Our studies of forest soils of the East-European Southern Taiga showed that soil horizons affected by the slash-and-burn cultivation in the past have a set of diagnostic features in the soil morphology, grain size composition, and composition of charcoal, pollen, and phytolith spectra. Based on these features, several episodes of swidden cultivation ranging in age from 800 to 1800 cal. yrs. BP were recorded in paleosols buried under Medieval Slavonic kurgans. Pollen spectra of the swidden layers in paleosols were compared to pollen spectra of peat layers of the same age in the adjacent peatland. The pollen spectra of all swidden horizons of paleosols appeared very similar, with a high proportion of AP, the dominance of *Betula*, and simultaneous presence of indicators of cultivation (*Cerealia*-type pollen) and those of post-fire successions (*Chamaenerion*, *Pteridium* and *Marchantia*). In the peat pollen diagrams, the onset of swidden cultivation was marked by the sharp decrease in the pollen of late-successional and broadleaved tree taxa (*Picea*, *Quercus*), by the increase in early successional taxa (*Betula*), and by the appearance of agricultural indicators (cultivated grasses and weeds), along with various herbs, indicative of forest clearance. A high proportion of *Betula* in swidden landscapes was documented in pollen spectra of both paleosol and peat layers, reflecting local birch groves, common in landscapes with a long practice of shifting cultivation. The overall taxonomic diversity of anthropogenic indicators in peat spectra was significantly higher than in soil, while the groundcover taxa indicative of post-pyrogenic successions (*Chamaenerion*, *Pteridium*, and *Marchantia*) were considerably more noticeable in the swidden horizons. Our results show that pollen spectra of paleosols identify and localize ancient swiddens more reliably, while the pollen spectra of peatlands provide a more adequate picture of the proportion of agricultural lands in the region and their temporal dynamics.

A. LOCAL VEGETATION OF THE KAMCHATKA RIVER VALLEY DURING THE HOLOCENE: RECONSTRUCTION BASED ON PALYNOLOGICAL AND TEPHROCHRONOLOGICAL DATA

Abstract author(s): Pimenov, Valerii (-) - Ershova, Ekaterina (-) - Krenke, Nikolay (-)

Abstract format: Poster

The Kamchatka Peninsula offers a unique opportunity for conducting large-scale, multidisciplinary research projects. Despite numerous studies of regional reconstruction, a comprehensive understanding of the ecological history of local plant communities in the region has been lacking. This study aims to reconstruct the Holocene vegetation of the

Kamchatka River valley and link our findings with tephrochronological studies. We hypothesize that volcanic activity has significantly impacted the dynamics of local vegetation over the past 12,000 years.

We conducted pollen analysis on four soil sections from archaeological sites in the Kamchatka River valley and used statistical processing techniques like principal component analysis and cluster analysis. AMS radiocarbon dating was used, along with tephrochronological dating.

Our findings challenge the existing belief that grass tundra-steppe communities spread in the late Pleistocene (12730-11940 BP) and instead suggest the presence of arboreal taxa (AP). Principal component analysis of pollen spectra from soil samples identified volcanic activity and hydrological conditions as the main factors influencing the formation of local vegetation during the Holocene.

Despite the results obtained, we acknowledge, that climate also played a role in forming regional vegetation. However, since soil samples only reflect the local plant component and are influenced by high pollen-producing plants growing near the sampling point, it is necessary to study modern pollen spectra for a more comprehensive understanding of the factors determining local vegetation development in the valley.

Our study complements previous research and provides a clearer understanding of the interaction between past plant communities and environmental factors in Kamchatka. Therefore, further research into the interaction between climate and vegetation dynamics in Kamchatka is needed to gain a more complete understanding of the ecological history of the peninsula.

B. WOOD USE IN CURONIAN CREMATION RITUALS AND ITS IMPACT ON THE ENVIRONMENT AND LANDSCAPE IN WESTERN LATVIA

Abstract author(s): Donina-Kalnina, Inga - Bērziņš, Valdis (Institute of Latvian History, University of Latvia) - Stivrins, Normunds (Department of Geography, University of Latvia; Institute of Latvian History, University of Latvia)

Abstract format: Poster

The research will present the results of analysis of archaeologically recovered wood charcoal from Curonian cremation cemeteries as well as palaeobotanical and palaeoecological analysis of Lake Ķikuri (Latvia) sediments. This research examines cremation cemeteries in western Latvia during the 10/11th–15th century AD. During this period, cremation graves constituted the dominant burial form in the region. Attention will focus on the analysis of wood charcoal as well as pollen and plant macrofossil samples, seeking to assess to what degree they reflect the palaeoecology of the study region and/or funerary beliefs and traditions. The results will provide evidence of the wood resources available in the environs of the burial site, and fuelwood selection for cremation (random gathering or special selection of species). Other rituals relating to burials will be also evaluated. That the Curonians did attach special importance to the choice of wood for cremation is suggested by the account given of pagan Curonian cremation practices by the French traveller Guillebert de Lannoy (early 15th century), where he states that exclusively oak was used for this purpose.

Note/comment:

Project “Burial practices in the landscape: present-day Latvia in the Iron Age (AD 1–1200)” (Izp-2021/1-0163).

307 CONTRADICTIONS OR COMPLEMENTARITIES? THE SCIENTIFIC SIGNIFICANCE OF RESCUE EXCAVATIONS AND THEIR IMPLICATIONS FOR ARCHAEOLOGICAL RESEARCH

Session theme: 3. Heritage Narratives and Representations

Session organisers: Staeuble, Harald (Heritage Office of Saxony) - Demoule, Jean-Paul (Institut Universitaire de France & Université de Paris I) - Glørstad, Håkon (University of Oslo, Museum of Cultural History)

Session format: Regular session

Thanks to the successful enforcement of European conventions as well as the gradual upgrading of national monument protection laws after 1990, heritage services have gained unprecedented possibilities to save threatened monuments - be it through their conservation, their preservation or their documentation through excavations.

As result, the number of large-scale excavations paid for by polluters has increased considerably in recent years. They provide us with an enormous increase in knowledge that frequently leads to new and unexpected results that permanently change our understanding of the past. They are paradigm shifting or at least significantly boost knowledge, and, at least in part, they occur by chance! In this respect, such large-scale excavations, give us an opportunity to reach beyond entrenched patterns of thought, and beyond circular arguments.

At the same time, a general decline in archaeological funding can be observed, resulting in a shortage of teaching staff and research funding at many university departments. This leads to a decreasing availability of local expertise and it

is becoming increasingly difficult to organise excavations for research and teaching, which can then per se only be small-scale and thus rarely representative - especially when it comes to settlement and landscape archaeology, which needs a large-scale view.

Upon this background, we propose to address the overall lack of productive and lasting cooperation between heritage agencies on the one hand and universities on the other. The conceptual differences between large rescue or “preventive excavations” led by development work and small “research excavations” initiated by academics seems to be exaggerated, and the discipline, including university training, certainly benefit from their better synergies and integration. Ultimately, the aim is to reduce supposed antagonisms and to promote cooperation instead of confrontation, for the benefit of archaeological knowledge.

We invite to an open exchange of controversial views from all parties concerned.

ABSTRACTS

1 TOWARDS THE END OF ANTAGONISM BETWEEN ACADEMIC AND PREVENTIVE ARCHAEOLOGICAL RESEARCH: A FRENCH PERSPECTIVE

Abstract author(s): Salas Rossenbach, Kai - Marx, Amala - Bouiron, Marc (INRAP - National Institute for Preventive Archaeological Research)

Abstract format: Oral

Since the implementation of a law on preventive archaeology in France, the number and quality of archaeological interventions has increased significantly. The scientific policy of preventive archaeology carried out mainly by the Institut national de recherches archéologiques préventives (Inrap) is materialised by more than 2000 field operations each year in extremely variable contexts. From the point of view of the more academic structures (universities and research establishments), the field research activity takes the form of dozens of programmed operations (in France and abroad) carried out over a longer term and most often focused on one site. These contexts of archaeological knowledge creation are some time depicted as antagonist in their goals, means and results. Repositioning these different activities from the point of view of their context of exercise, their scientific output and their social utility, offers a global vision of the complementarity of the different players in an original national archaeological system whose common aim is to be a shared common good.

2 GLOBAL TRENDS AND DEVELOPMENT-LED ARCHAEOLOGY IN NORWAY

Abstract author(s): Glorstad, Hakon - Kallhovd, Karl (University of Oslo)

Abstract format: Oral

One of the most striking features of Norwegian archaeology is the strong dominance of development-led archaeology. Legislation going back to the beginning of the 20th century and the strong position of the university museums in Norwegian archaeology are two important factors explaining this dominance. The university museums are still doing the vast majority of development-led excavations, combining this activity with research, collection management and development as well as education and public outreach. This system has acted as a vital ecosystem of knowledge for decades.

The last twenty years Norwegian archaeology has been considerably influenced by globalism, marked liberalism and identity thinking. The strong connection between development-led archaeology and the museums has given this influence a distinct character, presumably slightly different from other national systems. This paper discusses some of these relations, questioning whether these factors have challenged the established system of knowledge production in Norwegian archaeology. This is a pertinent question as the government has initiated a total revision of the Cultural Heritage Act, which has given juridical legitimacy to the present integration of development-led archaeology into the universities' knowledge production.

3 STONE AGE RESCUE EXCAVATIONS AND RESEARCH IN WESTERN NORWAY - CHALLENGES AND POSSIBILITIES

Abstract author(s): Bergsvik, Knut Andreas - Lundström, Victor (University Museum, University of Bergen) - Aksdal, Jostein (Vestland County Council)

Abstract format: Oral

In Norway, the Norwegian state – effectively the five archaeological University Museums – has the responsibility for performing rescue excavations of prehistoric sites and monuments that are destroyed by modern development. According to the law of antiquities, these excavations are financed by the developers, which sometimes are private firms and corporations, but for the most part companies that are owned by the state itself. Since the mid-1950s, there has

been massive development along the Norwegian coast and mountain plateaux, which were preceded by rescue excavations. Such excavations has been particularly common since 1980, and during 1980–2015 the University Museum of Bergen carried out 165 Stone Age excavations in western Norway. Parallel to this, the number of research excavations in this region has been low. An overview of the rescue excavated sites was published in 2020 and since then, the museum has continued the work on establishing databases covering surveyed sites and stray-finds in addition to excavated sites. These different databases show that there are significant discrepancies between the distribution of the different data types, which indicates that rescue excavations only cover a part of the site- types and landscapes that were used during the Stone Age. It is argued that a new strategy is needed to catch up on this problem, which requires active collaboration within the University sector as well as towards archaeologists in the County Council. Without a doubt, there is a need for targeted survey campaigns in new landscapes which are followed up by research excavations.

4 DEVELOPER-LED MEDIEVAL ARCHAEOLOGY AND RESEARCH IN NORWAY

Abstract author(s): Bakken, Kristin (NIKU)

Abstract format: Oral

NIKU (Norwegian Institute for Cultural Heritage Research) has the public mandate to conduct developer-led archaeological excavations in Norway's medieval towns as well as in medieval church sites and burial grounds. The excavations are always funded by „the polluter“, and the budgets are set by the ministry. The budget model includes the excavation and on-site documentation, cataloguing and conservation of finds as well as the production of the archaeological report. There is no funding for academic publication within these budgets. In this paper I will first present the mechanisms by which NIKU see to that our work is carried through in line with current research questions and in dialogue with the research community. Then I will outline how our results are fed into the Norwegian archaeological research infrastructure. Thirdly I will outline the institute's own research opportunities and priorities. I will conclude by pointing to ways that our national practices and cooperation might be improved.

5 CHALLENGES AND OPPORTUNITIES IN CONTRACT ARCHAEOLOGY - GRASCA A PATH FOR THE FUTURE

Abstract author(s): Eboskog, Mikael - Nyqvist, Roger (Bohusläns museum; GRASCA)

Abstract format: Oral

As an archaeological department within a county museum we faced considerable challenges in 2006 and forward when Swedish archaeological system changed. Field archaeology become exposed to competition, making it a “market”, but at the same time not completely release it from state control. The county administrative boards were stipulated to work for a diversity of contract archaeological actors. Much can be said about the system that emerged, what long-term effects on archaeology this has led to and how the market works, but here we will focus on a new approach and the creation of opportunities from the challenges this paradigm shift in contract archaeology created.

It can be said that it was a shocking and challenging time for the archaeology departments in museums. As a museum we were less suited to a competition-driven contract archaeology than private companies for varied reasons. Since the market was still regulated by the state the volume has not increased significantly, although the number of actors and archaeologists has multiplied. It creates a financial pressure on everyone, and economic survival. It's our long-term ability to maintain and develop archaeology that the ideas grow into what came to be GRASCA.

The need to broaden contract archaeology and thus the market, we needed to go beyond field archaeology, create and develop new services for archaeology. This created the opportunity to start a new graduate school in cooperation with companies (and museums), based on contract archaeology and the connection between humanistic views and future societies. Through nine doctoral students, GRASCA has broadened the horizons of what archaeology and archaeologists can contribute to the benefit of society and its development. For us, an expanded role for the archaeologist provides an excellent opportunity to contribute in more ways to the benefit of society in addition to the purely economic benefit.

6 ACADEMIC RESEARCH, BASIS FOR PLANNING OR POPULAR SCIENCE? THE CONTRADICTION OF SWEDISH CONTRACT ARCHAEOLOGY

Abstract author(s): Sundkvist, Anneli (Societas Archaeologica Upsaliensis)

Abstract format: Oral

The earliest version of the Swedish Historic Environment Laws dates to the 17th century, which makes the law one of the oldest in Europe. However, the professionalisation of contract archaeology started much later. Social change and large building projects after World War II created a need for large-scale excavations and with them, a need for more archaeologist than universities and museums could employ on an all-year-basis.

Half a century later, 'Contract archaeologist' (Sw: uppdragsarkeolog), has become a specialisation within the profession of archaeology. The main part of archaeological texts produced in Sweden constitutes of reports and articles about sites excavated as contract archaeological projects. The outcome should be 'of scientific quality' as well as possible to use by different actors in community planning and enjoyed by the public. The question that needs to be asked is where this leaves the results and the data. Is it possible to fulfil all these goals or do we risk to end up with data that is not suitable for future research?

7 THE CHALLENGE OF PRODUCING KNOWLEDGE FROM DEVELOPER-LED ARCHAEOLOGY AND FROM WORKING WITH METAL DETECTORISTS

Abstract author(s): Ravn, Mads (Vejle Museums)

Abstract format: Oral

Since Denmark ratified the Malta convention in 2003, a large amount of data has been generated from developer-led excavations. Also, a liberal attitude towards volunteer detectorists is generating large amounts of metal finds that need precise documentation. Due to the decentral organization of the 27 archaeological museums which conduct the excavations in each region, the challenge has been to organize the large amount of data, digital excavation plans, C-14 dates, natural science data, and numerous finds coming in from metal detectorist, to create new knowledge. The need for cross-regional or central databases and initiatives is beginning to show, while the central authorities are losing the initiative, due to insufficient funds. This paper outlines the challenges and the initiatives that have appeared the last 20 years. It also discusses a number of bottom-up solutions that have appeared, e.g., the DIME detector database where volunteers register finds themselves by GPS. Also, other initiatives begin to appear, initiatives which potential and quality I need to share and discuss with you.

8 COMPANIES ARE KEY, BUT CANNOT WORK ALONE. TOWARDS WORKING TOGETHER ON ACHIEVING SCIENTIFIC AND COMMERCIAL SUCCESS

Abstract author(s): Oosterhout, Floris (Arcadis)

Abstract format: Oral

In the Netherlands there is a fully developed archaeological practice, in which various (commercial) companies carry out archaeological research under certificate.

The Dutch system has ensured a reliable output in terms of processual quality, but there is a deeply rooted illusion that it could also be used to sufficiently organize the scientific quality of the research.

I am convinced that the latter can only be achieved with a combination of expertise from the (commercial) field, scientific community and the responsible authorities.

It is the public authority that ultimately sets the requirements for the investigation, but it can only function if the commercial parties are recognized for their vital position within the framework of spatial development in The Netherlands.

As a heritage consultant at Arcadis, a large engineering and consultancy firm responsible for various large-scale programs in the spatial domain, I am in the position to organize and facilitate archaeological research on a large scale. Arcadis carries out integrated projects, and archaeology is one aspect. We are one of the largest clients of archaeological subcontractors and we see it as our task to carry out meaningful and scientifically relevant research within our projects. In The Netherlands we are far beyond the point of calling this rescue archaeology. In my contribution I would like to demonstrate this with examples from our practice, such as the construction of a hydrogen network throughout The Netherlands, the reinforcement of the Afsluitdijk and the large-scale programs to improve the ecological quality along the major rivers.

9 30 YEARS OF LARGE-SCALE RESCUE EXCAVATIONS IN ROMANIA: A SWOT ANALYSIS ABOUT OPPORTUNITIES & CHALLENGES FOR ARCHAEOLOGICAL KNOWLEDGE AND HERITAGE

Abstract author(s): Damian, Paul Cristian - Bors, Corina (National History Museum of Romania - MNIR)

Abstract format: Oral

The European convention for the protection of the archaeological heritage was ratified by Romania in 1997, and set the premises for a new national legislation in regard to this issue. After a void of specific legislation which lasted for an entire decade, in 2000 was adopted the new law concerning archaeology and rather soon the "polluters/developers pay" principle was necessary to be implemented since a series of private industrial projects and public motorways projects were initiated. This was a completely new reality for the archaeology and the archaeologists in Romania. It's very useful that, two decades later to undertake an analysis about how was understood by the different stakeholder the development led archaeology and how is was perceived by the academic environment, the heritage agencies and, last but not least by the institutions involved in this "new kind" of archaeology.

An in-depth analysis will be made, considering the experience of the National History Museum of Romania, which has an important expertise as concerns the rescue/preventive/development-led archaeology in Romania during the last 3 decades. The paper will present a series of key issues such as: the importance of these large-scale rescue excavation in providing new understanding and knowledge about the archaeological heritage; how to negotiate and communicate with the stakeholders in the benefit of archaeological heritage; the difficult dialogue between the administrative milieu (the heritage agencies) and the professional environment; the opportunities and constraints for developing a professional carrier in archaeology etc. The perspective provided by the paper encompasses certain positive evolutions, but also takes a closer look to the challenges which had to be overcome while undertaking large scale preventive excavation in Romania and recognizing their role in such paradigm shifting.

10 WHAT DO WE OWE TO THE DEVELOPMENT-LED ARCHAEOLOGY IN HUNGARY? THE LAST 30 YEARS FROM THE PERSPECTIVE OF SCIENTIFIC OUTPUT

Abstract author(s): Anders, Alexandra - Bartus, Dávid (Institute of Archaeological Sciences, Eötvös Loránd University) - Ernyey, Katalin (Government Office of the Capital City Budapest, Heritage Department) - Rácz, Zsófia - Raczky, Pál - V. Szabó, Gábor (Institute of Archaeological Sciences, Eötvös Loránd University)

Abstract format: Oral

As a result of a trend that began in the 1990s, the greater part of archaeological fieldwork in Hungary is currently conducted as part of preventive archaeology. Due to the archaeological tradition and the legislative background in Hungary, excavation activities involve museums, universities and research institutes as well as private companies. The Institute of Archaeological Sciences at Eötvös Loránd University (ELTE) has played a key role in this process from the very beginning, including the creation of a standardized archaeological protocol. According to the legal regulation of excavation activities, the excavation, documentation, primary conservation, and storage has to be financed by the developer („polluter pays“). However, this regulation does not provide resources for publicity, either academic or public, even though Article 6 of the Valetta Convention (in force in Hungary since 2000) stipulates „public financial support for a scientific summary record as well as for the full publication and recording of the findings“. In this situation, the scientific assessment of the finds can only be undertaken from other, scarce sources of funding, in which academic institutes were able to play a greater role than museums. In our presentation, we briefly review how, despite these difficulties, the vast amounts of information and finds that have been uncovered can nevertheless be academically utilised. The role of ELTE will be discussed at greater length. We have been able to integrate the assessment of at least a part of the excavations into our teaching/research activities. Several BA, MA, and PhD theses are based on these excavations and several major ongoing research projects have grown out of them. We certainly consider it useful to have been involved in these development-led archaeology.

11 GEOPHYSICAL PROSPECTION AND RESCUE ARCHAEOLOGY IN THE CZECH AND SLOVAK REPUBLIC

Abstract author(s): Tencer, Tomáš - Havelka, Jan - Milo, Peter - Šálka, David - Vágner, Michal (MUNI - Ústav archeologie a muzeologie)

Abstract format: Oral

The recent construction boom in former Czechoslovakia has led to increased demand for archaeological excavation and has necessitated the development of more efficient and effective methods for identifying and protecting cultural heritage sites. As a result, geophysical prospection has become a crucial tool in modern archaeology, offering a rapid and non-invasive means of mapping subsurface archaeological features.

This study presents the current state-of-the-art of geomagnetic prospection as applied to rescue archaeology in the Czech and Slovak Republic by examining several large-scale magnetometry surveys conducted in recent years. The paper highlights the advantages and limitations of these surveys and emphasises the importance of cooperation between cultural heritage management bodies and investors in realising the full potential of archaeogeophysical prospection.

The knowledge gained from geophysical prospection in rescue archaeology has numerous applications in scientific archaeology research and academia. For instance, geomagnetic data can be utilised to reconstruct the cultural landscape, understand the relationship between buried features and the broader landscape, and evaluate the significance of archaeological sites for future study. This information can inform research on past settlement patterns, subsistence practices, and social organisation, as well as provide insight into the interpretation of cultural heritage sites for the general public. The results of these rescue excavations have the potential to reveal paradigm-shifting discoveries, contributing to our understanding of the history of human civilisation.

Despite the acknowledged benefits of geomagnetic prospection in rescue archaeology, its integration into the field remains limited due to a lack of legislation and standards. Nevertheless, this study underscores the invaluable role of geomagnetic prospection in preserving cultural heritage sites and advancing scientific research and academic inquiry.

12

RESCUE OR SCIENTIFIC EXCAVATION? TWO SHIPS THAT ARE JUST PASSING EACH OTHER

Abstract author(s): Marik, Jan (Institute of Archaeology of the Academy of Sciences of the Czech Republic, Prague)

Abstract format: Oral

The 1990s were not only a crucial new period for archaeology in the Czech Republic. Major legislative changes came surprisingly in the late 1980s as if foreseeing the following developments. The end of the centrally controlled economy also meant the end of many large-scale scientifically oriented researches and a massive increase in development-led excavations. This radical change made it possible to compare the positive and negative aspects of both approaches in a very short period.

The decentralisation of the state system also led to the emergence of a number of regional university departments that had interests and priorities that went in a completely different direction from development-led excavations. The current problem of university education is not the reduction of support for the relatively dense network of university departments (they suffer permanently from a lack of funding), but rather the decline in the number of people interested in studying and a certain degree of fragmentation of the scientific potential of the upcoming generations.

The experience of the last 30 years shows that whether large-scale discoveries or small-scale, targeted research organised in the context of university education is irrelevant for paradigm shifting or at least significantly boost knowledge. There is no supposed antagonism between university departments and rescue archaeology. Rather, they are two disparate worlds that have very little to share in common.

The development of archaeology in the Czech Republic over the last three decades differs significantly from the picture presented by the organisers of the session, and it is therefore entirely appropriate to question the reasons for this and to look for opportunities for beneficial and synergistic cooperation.

13

THE SIGNIFICANCE FOR THE ARCHAEOLOGICAL KNOWLEDGE IN LINEAR INFRASTRUCTURE PROJECTS IN BAVARIA

Abstract author(s): Berg, Stefanie (Bayerisches Landesamt für Denkmalpflege)

Abstract format: Oral

Since 2004, excavations as parts of linear infrastructure projects in Bavaria have not only been focused on known archaeological monuments but also include areas, that might have been favourable for settlements especially in pre- and early history. These areas include e.g. lower and upper terraces of rivers and streams and as well as fertile loess areas. In many of the supported excavation projects it has also been possible to explore areas without any indications for archaeological monuments. These conditions allowed a comparison between the prediction accuracy of monuments and their real presence.

My primary concerns refer to an insight of our longterm experiences and their impact on our work and secondly the problems and possibilities for the development of cooperations with universities and other institutions for further archaeological research.

In my presentation focused on the following issues:

- How does a heritage agency like the Bavarian State Department for Cultural Heritage handle these challenges?
- What are the implications for the work for government's heritage management and for archaeological research?
- What suggestions arise in practice to achieve our goals on behalf of the protection, the investigation and research of archaeological monuments?

14

GENEROUS IN OVERVIEW AND PRECISE IN DETAIL! COOPERATION BETWEEN HERITAGE CONSERVATION AND UNIVERSITY EDUCATION USING THE EXAMPLE OF SAXONY, GERMANY

Abstract author(s): Staeuble, Harald - Kretschmer, Saskia (Archaeological Heritage Office Saxony)

Abstract format: Oral

Whatever one's personal attitude to lignite mining - or to other large-scale soil sealing/destruction - the fact is that they can be gold mines for archaeological research. Not only can one investigate settlements and their surroundings over a large area and in their wider context, but one usually also has the chance to pursue specific questions or to identify and excavate individual special find situations in detail. In order to excavate and research such large archaeological areas, however, compromises have to be made and excavation techniques adapted accordingly. On the other hand, it is also possible to separate out individual smaller areas in order to apply very special excavation techniques or methods of analysis and differentiated evaluation. Here, research traditions that are usually regarded as opposing can come together. They are mistakenly contrasted under the catchwords „rescue excavations“ and „research excavations“. In Saxony, not only has a new monument protection law come into force since the early 1990s, opening up many possibilities, but the heritage office responsible for its implementation has also made good use of them. Using the example of the large-scale excavations in Saxony's open-cast lignite mines - e.g. the LPC settlement Eythra in

the Zwenkau open-cast mine, which was excavated over an area of 30 ha, or the somewhat less well-known but all the more significant LPC settlements Droßdorf and Kieritzsch in the Peres open-cast mine - the aim is to show what opportunities there are for good joint cooperation between the State Office for the Preservation of Archaeological Monuments in Dresden and the Archaeological Institute of the University of Leipzig, but also where there is still room for improvement.

308 MATERIALITIES OF DEATH, RITUALS, AND BELIEFS: IN SEARCH FOR NEW UNDERSTANDINGS OF BURIAL PRACTICE ACROSS HIGH AND LATE MEDIEVAL EUROPE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Dahlström, Hanna (Museum of Copenhagen) - Søvsø, Mette (Museum of Southwest Jutland) - Petersen, Anna - Lorvik, Katharina (Norwegian Institute for Cultural Heritage Research- NIKU)

Session format: Regular session

According to Christian beliefs, the buried body should not be accompanied by grave goods – a break with earlier traditions in many pre-historic cultures. However, recent research has focused on the fact that many medieval cemeteries throughout Europe contain a wide variety of objects, and other forms of deposit, in graves, seemingly related to the burial ritual. Some are clearly linked to Christian belief (such as rosaries and pilgrim badges), but others are more difficult to interpret – for instance stones placed on the body, charcoal deposits and pottery sherds arranged in the grave. Some expressions are diffuse, and easy to overlook – and it is sometimes unclear if the material remains are intentionally placed or a result of taphonomic processes.

We believe that a wider awareness of such unusual deposits would increase the frequency of them being identified and interpreted as part of the burial ritual. By asking new questions, such as: What actions are seen in the burial?; and Who do we see in the material expressions in the grave?, we may discuss the meanings behind the material traces and shed new light on medieval lived religion, including Christian ideology, folkloric traditions, views of death and the body, as well as social relations in medieval communities across Europe.

In this session we are looking for examples of high and late medieval churchyards and graves (AD 1000-1500) showing various expressions of mortuary practice, both objects, and other deposits and features related to burial rituals. We are interested in the presentation of case studies, interpretations and hypotheses, and theoretical considerations of materiality and practice in relation to death and burial. The aim is to enhance knowledge of the materiality of medieval burials in Europe, to discuss variations, meanings, and to consider how material expressions of burial rituals may be identified in archaeological practice.

ABSTRACTS

1 A SPACE FOR THE DEAD. THE ARRANGEMENTS OF GRAVES AS AN EXPRESSION OF CHANGING CONCEPTS OF DEATH IN MEDIEVAL ODENSE

Abstract author(s): Bjerregaard, Mikael (Museum Odense)

Abstract format: Oral

This paper shows how the materiality of medieval graves can be seen as an expression of changing views of death in the 10th – 16th centuries. Based on the stratigraphical and contextual information on more than 800 graves excavated in St. Alban's cemetery in Odense, we can observe chronological changes in mortuary practices. This paper will discuss if the commonly accepted chronology in changing arm positions applies, and if so, how can it be explained. A variety of arrangements of the graves below ground suggest that relatives of the deceased oversaw the material aspect of the burial and that a focal point often would be to create a protective space around the dead. This suggests a discrepancy between the clergy and the lay people concerning what would happen to the inhumated body. On the one hand, the intercutting of graves and scattering of bodily remains seemed to be routine; on the other hand, some burial practices tried to prevent exactly that.

This paper contributes to the session's theme by emphasizing the need to apply a reinforced focus on features in the arrangement of graves to better understand medieval burial practices. One way to do this is for field archaeologists to consider the human remains as the primary material object in the grave and not just a case to be left to the biological anthropologists. Indeed, closer collaboration with for instance anthropologists and pollen analysts in the field work could heighten the quality of our observations. One prerequisite for discussing changes in mortuary practices (as well as for instance in health and pathology) is to get more exact dating of graves, which is what we hope to obtain in a future study conducted in collaboration with Unit of Forensic Anthropology (University of Southern Denmark).

2 GOD COMMANDED BUT THEY DID NOT COMPLY: ISLAMIC BURIALS WITH GRAVE GOODS

Abstract author(s): Gonzaga, Raquel (University of Coimbra)

Abstract format: Oral

The norms of the Islamic religion are methodical leaving little room for ambiguity in the practices of a good Muslim. For those who follow Islam, it is crucial to strictly comply with various rituals throughout their earthly life to guarantee entry to Paradise.

In Islam, God instructed the prophet Mohammed to guide the faithful and teach them how to bury their loved ones. The prophet taught that the deceased should be positioned in right lateral decubitus, facing the holy city of Mecca, without sumptuous graves and without any kind of grave goods.

In Islam, funerary austerity and equality in death is mandatory. This conduct is practiced since the beginning of the creation of Islam (7th century) to the present day.

However, as we proceed with the inventory of the Islamic necropolises from the 7th to the 13th century of Gharb al-Andalus – in present-day Portuguese territory – several recorded burials do not fit the rules indicated by the prophet Mohammed. Among these, there are burials with grave goods that depart from the norm of the Islamic orthodox rite. Pots, coins, rings and lamps are just a few examples.

In this session, I'm looking to present these exceptions that allow us to inquire about various social and ideological aspects of the communities that buried their dead in the Gharb al-Andalus.

3 WHAT IF THERE REALLY ARE NO FINDS IN THE GRAVES? FUNERARY CUSTOMS OF MORLAKS FROM THE ŠIBENIK HINTERLANDS: MUKOŠE SITE

Abstract author(s): Belaj, Juraj - Kokotović, Tea (The Institute of Archaeology, Zagreb)

Abstract format: Oral

Archaeologists are occasionally faced with the absence of finds in graves. But can this always be attributed to the community's Christian beliefs, or can we speculate about other possibilities?

After the Ottoman–Venetian war (1499–1503) the border area around Šibenik was deserted, and Christian Morlaks from Hercegovina settled here. A number of historical sources attest to this migration, while archaeological evidence is still very scarce. A unique instance is the multilayer site of Mukošće, where the remains of a rectangular building with five apses were discovered. The function and age of this building are still unknown, but according to the map from the 16th century (K1), during the late Middle Ages the building was already in ruins. In the 16th century, the Morlak population began to bury their dead in the collapsed remains. Archaeological excavations of the site revealed 48 graves; the graves' construction is similar to that of other burial sites in Dalmatia: the deceased were placed in a rectangular structure made of vertically placed stone plates with an identically constructed cover. While the graves' orientations vary, many of them adhere to the structure's ground plan. The graves were not superimposed, and there were few finds in them.

These circumstances prompted a couple of questions. What does the paucity of finds, or better yet, the absence of Christian or “pagan” elements, reflect? Is this a reflection of the community's poverty and destitution, or is it a part of their burial practice? Does the burial in the collapsed remains suggest a symbolic connection to the building and “continuity of the sacred place”? In this lecture, we aim to reconstruct the funerary practice of the Christian Morlaks interred at the Mukošće site by combining historical sources, results of the osteological analysis, and comparative analysis with contemporary burials in the area.

4 STATUS, DEVOTION AND CARE – BURIAL PRACTICE IN HIGH AND LATE MEDIEVAL RIBE (DENMARK)

Abstract author(s): Knudsen, Maria (Museum of Southwest Jutland)

Abstract format: Oral

In 1993 and 2008–12, hundreds of high and late medieval burials were excavated at the former Franciscan friary and at the cathedral in Ribe. The digitized and phased material sheds light on many and diverse aspects of medieval burial practice.

This paper will present the variation in burial forms and their development over time, but also try to point out several other, perhaps less obvious aspects of the material:

Patterns in the distribution of religious objects in the graves may indicate a special religious dedication for some groups. At the same time, there seems to be a correlation between gender and age distribution in relation to which burials contain objects, and sometimes also in relation to the location of the graves (inside/outside).

The location of the burials, their physical setting and the presence of certain objects in some cases challenge the dogma that everyone was equal before God in death. On the contrary, there is some evidence that all these attributes could indeed be used to signal qualities such as piety or status, both in the worldly life one left behind, but also – and perhaps just as importantly – in the afterlife/purgatory.

Burials with two or more individuals in the later phases of burial may represent the few traces we have of epidemics, but are these grave types merely a practical solution in a situation with many dead bodies? Or could the dead support each other through physical proximity? The idea of care both for, but also between the dead may also underlie the gathering of bones from disturbed graves in special pits, or the deliberate placement of bones from other individuals in newly constructed graves.

5 VARIATIONS IN BURIAL PRACTICE AS A WINDOW INTO MEDIEVAL SOCIETY - CASES FROM TRONDHEIM AND COPENHAGEN

Abstract author(s): Lorvik, Katharina (NIKU - Norwegian Institute for Cultural Heritage Research) - Dahlström, Hanna (Museum of Copenhagen) - Petersen, Anna (NIKU - Norwegian Institute for Cultural Heritage Research)

Abstract format: Oral

Recent excavations of medieval cemeteries in two Scandinavian towns – Trondheim, Norway, and Copenhagen, Denmark – have produced interesting results regarding local variations in burial practice that need to be problematized and discussed. Two sites in Trondheim and two sites in Copenhagen were documented using the same methodological standards which enabled high-definition study combining detailed information of skeletal remains, archaeological stratigraphic contexts, environmental data, and absolute chronology. There are certain similarities between the towns when it comes to the physical expression of the burials, such as in the use of material components like stones or charcoal. It is also noteworthy that differences between the two cemetery sites within each town were observed. Only one of the cemeteries in each town displayed variation in burial practice, while the other did not, despite both cemeteries being closely situated and contemporary (11th – 14th centuries). Our results show that contrary to the normative perception of Christian burial practices as simple and homogeneous, variations existed both within and between cemeteries in both towns.

This presentation will give an overview of the material attributes seen in these cemeteries and discuss possible meanings behind the variations. It is unlikely that these examples of variations in medieval burial practices are unique, although it might to some extent be an urban rather than a rural phenomenon. Furthermore, variations are not easily detectable during excavation, requiring skilled awareness by archaeologists. Simply put, one needs to know which material expressions to look for and be able to assess whether they are random, results of taphonomic processes, or indicative of a particular burial practice.

6 VARIATIONS IN MEDIEVAL BURIAL PRACTICES IN FINLAND

Abstract author(s): Moilanen, Ulla (University of Helsinki)

Abstract format: Oral

There is a considerable variation in Finnish early medieval and medieval (c. 900-1400 CE) burial practices. The inhumation graves of the period include various burial positions, treatments and orientations, double and multiple burials, spearheads that may have been struck through the coffins, and the use of cremated bones and objects. Based on new analysis, it is possible that many of the features can be explained by individual choices made at different stages of the burial ritual. Again, different social motivations, beliefs and local events may have influenced these choices. It seems that around 1200 CE, double and multiple burials became slightly more common, and at the same time, typologically older spearheads were struck into the coffins. These phenomena may be linked to a short-term mortality crisis that could have resulted from crop failures and epidemics. The period's political instability may also have triggered local power struggles, which may have emphasised the ritual importance of ancestors, which led to the placement of old, cremated material in inhumation burials. Overall, the contextualisation and taphonomic analysis of graves will allow multiple interpretations and help raise new questions that will help to integrate the data into a broader geographical, temporal and theoretical debate on burial practices in medieval northern Europe.

7 THE MATERIALITY OF DEATH IN THE HOUSEHOLD, AS SEEN IN THE EARLY CHRISTIAN CEMETERIES OF NORTHERN ICELAND

Abstract author(s): Zoega, Gudny (Hólar University)

Abstract format: Oral

In recent years a number of early Christian cemeteries have been excavated in the region of Skagafjörður, North Iceland. These cemeteries were owned and operated by individual households and date from around AD 1000 into the first decades of the 12th century. Superficially, these structures seem uniform and there is a conspicuous lack

of grave goods. But with the comparative material from three fully and 15 partially excavated cemeteries, the view becomes more nuanced and certain traditions and practices come into focus. It has become clear that from the onset a Christian cemetery was in no way a static entity but, rather, existed as a fluid construction imbued with meaning and structure. There are certain external features, such as uniform shape and size, that seem to indicate a pre-ordained form of burial space. However, when the internal layout of graves and grave furnishings are examined, there was room for variation that speaks of both tradition and individual touches. The materiality of death is visible in the internal landscaping and layout of graves, selective relocation of bodies, selective use of coffins, the use of tephra and turf as grave furnishings and deliberately placed stones in the graves. Analysis of burial customs and the osteological material indicate that the bounded cemetery space served as a reflection of the social realities of the population it served. In this talk I want to give an overview of the findings of the analysis of the burial material, what it tells us about early Christian burial tradition in Iceland, and to what extent the burial space may reflect a continuation of earlier non-Christian traditions.

8 UNCOMMON PRACTICES - THE USE OF GRAVE GOODS IN MEDIEVAL DENMARK

Abstract author(s): Struer, Anine (Museum of Copenhagen)

Abstract format: Oral

This paper presents the main conclusions of a study of the use of grave goods in medieval eastern Denmark. While most published research on the topic in a Danish context focuses on either one specific type of artefact or the finds from one specific cemetery, this study aimed at a more systematic approach by including all excavated burials with grave goods within the area of research. This provided not only information on the range of artifacts that followed medieval people into to grave. By using a bird's eye view, it has been possible to discern certain patterns within the material, relating to the types of artifacts and to the context within which they have been found.

No doubt the placing of artefacts with the dead in many instances had religious purpose or background. One of the questions is what purpose or belief was behind and to what extent these where in accordance with or in opposition to the established religious framework of the Church. In an attempt to get a more thorough understanding of the meaning(s) of this un-common practice of grave goods, the results of the study are discussed in relation to ecclesiastical legislation, liturgy, and theology of the period. Additionally, some common interpretations of the grave goods are critically examined.

9 MAGIC AS AND INTERPRETATIVE FRAMEWORK IN HIGH AND LATE MEDIEVAL BURIALS

Abstract author(s): Knight, Gwendolyn (Centre for Medieval Studies, Stockholm University)

Abstract format: Oral

Recent work by, for example, Roberta Gilchrist, has highlighted the possibilities of considering the role of magic when interpreting objects in high and late medieval burials. Such an interpretation encourages us to add flexibility to our perceptions of the worldviews held by medieval people as well as our interpretations of their ritual practices. Nevertheless, debates in different disciplines (such as anthropology and history) surrounding the definition of 'magic', and the inconsistent engagement with these debates within archaeology, means that precisely what is being identified as 'magic' and what it means to identify a given object or behaviour as related to 'magic' remain fraught questions. This paper will map out the current landscape of 'magic' as an interpretative framework and, having identified the difficult areas, propose a path to navigate them. It will furthermore provide concrete examples from the North Sea region, and draw comparisons with written evidence (such as legal material or hagiography) where relevant.

10 A SYMBOLIC PILGRIMAGE? - PILGRIM BADGES, SHELLS AND RELATED OBJECTS IN MEDIEVAL DANISH BURIALS

Abstract author(s): Søvsø, Mette (Museum of Southwest Jutland)

Abstract format: Oral

Pilgrim souvenirs, mostly in the form of scallops, are known from a number of Danish burials dated between the 12th and 16th century. Traditionally, they are perceived as tokens brought home from pilgrimage by the deceased. As symbols on journeys to sacred places, they protected the dead through purgatory presenting the pilgrim as pious. Recent research into Danish finds of pilgrim badges and related objects has generated new observations, adding more facets to these artefacts and to their use and meaning in medieval society.

Comparison with other archaeological finds from the period may indicate, that the presence of the artefacts in burials are an expression of a belief in the inherent powers of certain artefacts, that may have roots back in pre-Christian time. With Danish high- and late medieval burials as turning point, this paper will focus on new observations of ritual practice and perception of death based on burial contexts, the buried, as well as the artefact types, their positions in the graves as well as traces of use and wear.

11 THE MAN IN THE PARCEL

Abstract author(s): Ahlstrom Arcini, Caroline - Konsmar, Annika (The Archaeologist, National Historical Museum)

Abstract format: Oral

The sight that met the archaeologist during the excavation of a grave in Gårdby church on the island of Öland, Sweden, made a lasting impression. In front of the archaeologist lay the skeleton of a man, with his mouth open and a length of rope looped around his head so that it formed a cross over his face. This cord continued down the body, allowing it to be bound around the deceased's ankles.

The rope was not the only element associated with the skeleton. Pieces of a dry organic material also lay among the bones, but what did these fragments come from? Could they be dried and waxed linen fabric, or some sort of leather? The possibility that they were remains of the corpse itself seemed to be discounted by the presence of fragments lying both on top of and below the rope. Another curious feature was presented by a small, pointed stick lying between the man's fifth and sixth ribs on the left side of his chest. The individual is dated to 1030-1060 AD.

Similar cases of mortuary practice have been seen in Denmark and England. The grave of a 12th-century king, Valdemar the Great had also been carefully trussed up in an animal skin prior to burial and 'The man from St Bee' that was discovered in 1981, during excavations within the grounds of St Bees Priory, Cumbria, England was like the man from Gårdby wrapped up like a package.

What are the reasons for these unusual care of their bodies before burial? Was it an unusual handling or was it just discovered thanks to good preservation conditions? Can we also discover the same form of pre-burial treatment in graves where the preservation condition is not as optimal as these?

12 BURIALS IN TRANSITION: EARLY MEDIEVAL BARK GRAVES IN WESTERN SWEDEN

Abstract author(s): Beckman, Anna - Lennblad, Astrid (Lödöse museum) - Ahlström Arcini, Caroline (Arkeologerna/Statens Historiska Museer)

Abstract format: Oral

The transition between the Viking age and the Middle Ages in Scandinavia, around 1000 AD, is a period of rapid transformation when old pagan traditions meet new practices inspired by the slow process of Christianisation.

In 1981, archaeologists were surprised to find several Viking age and early medieval burials underneath Nödinge kyrka, western Sweden. The current church, dated to the 17th century, was built over an older one dating to the 12th century.

Fifteen burials were discovered underneath the older church. Some of them in a fashion that is unique in this area - the dead were buried in a shroud of bark or birch bark, which in some cases was sewn together with linden bast. In western Sweden, only two similar graves have been excavated archaeologically. Several of the dead were accompanied by hazel sticks and one individual had been fitted with an elaborate cap made of birch bark. In other cases, objects such as ring buckles and one presumed paddle were found within the graves.

Until now, only two of the Nödinge burials have been radiocarbon dated, both to around 1050 AD. No proper excavation report has been published about the findings. Therefore, a research project has been launched with the specific aim to create a comprehensive analysis of this important material. Traditional osteological analysis in combination with additional carbon 14 dating's and strontium isotope analysis will hopefully help us to gain exciting new knowledge about the people that were buried here and about the rare custom of bark burials.

The purpose of this paper is to present both the material and the result of the project so far. Furthermore, we hope that this presentation will serve as a starting point for an exchange of knowledge about these kinds of burials in other parts of Europe.

13 BISHOP STEFAN WIERZBOSKI: PATRON DURING HIS LIFETIME AND A „MONUMENT“ AFTER DEATH - ANALYSIS OF THE BURIAL

Abstract author(s): Dabralet, Igor (Nicolaus Copernicus University on Torun) - Dobek, Mikolaj (Nicolaus Copernicus University in Torun)

Abstract format: Oral

The main purpose of archaeologists' examination of burials, both of lay people and of the clergy, is to search for traces that would make it possible to learn about funeral behavior from centuries ago. An example of works that showed how much importance was attached to the dignified and proper emphasis of the social position of the buried deceased is the study of Bishop Stefan Wierzbowski burial.

Wierzbowski was one of the most important figures in 17th century Poland. However, there were many such people in the world of diplomacy and most of their activities fell into oblivion. It would probably be the same with the story of Wierzbowski, if not for the founding of the city of Góra Kalwaria. After death, the bishop was buried in his city. Wierzbowski was so revered that he is treated almost as a saint - every year in Góra Kalwaria commemorative ceremonies

commemorating the town's founder are held. In addition, all conservation work is carried out with donations from the city's residents. The cult of the deceased turned out to have a real impact on the state of the archaeological deposit. The care of his remains can be said thanks to the archaeological research. We know that the remains of the mummified bishop were moved three times. The fact that Wierzbowski's outfit was "updated" three times during the subsequent transfers of the corpse caused, that the burial examined by archaeologists from Nicolaus Copernicus University became an outstanding treasury of knowledge about liturgical costumes. The analysis of liturgical sets found in his sarcophagus that became the basis for telling the story of the burial itself and the circumstances surrounding it. It also became possible to focus on the issue of the role of burials of outstanding residents in the life of the local community.

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HUMAN IMPACT AS A PRIMARY CAUSE OF ENVIRONMENTAL TRANSFORMATION: URBANIZATION IN CENTRAL ASIA AND IRAN FROM PREHISTORY TO HISTORICAL PERIODS

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Cerasetti, Barbara (ISMEO – The International Association for Mediterranean and Oriental Studies) - Arciero, Roberto (Faculty of Archaeology, Leiden University) - Stančo, Ladislav (Institute for Classical Archaeology, Faculty of Arts, Charles University in Prague)

Session format: Regular session

Human activities strongly affected the environment over the millennia and changed the local landscape(s) in different ways. Extensive agricultural projects, management of water resources, deforestation, intensive grazing vegetation, ore mining, burning fossil fuels, pollution, and more recently extraction of oil and gas, have tremendously impacted the environment of Central Asia and Iran (e.g., the Aral Sea region). Since the 3rd millennium BCE, early urbanization largely contributed to shaping the local landscape in the regions such as the Iranian Plateau, the Kopet-Dagh piedmont, the Murghab alluvial fan, the Oxus region, and later also in the oases of Sogdiana.

This session aims to explore the impact that urban system(s) had as a primary cause of environmental transformation in Central Asia and Iran, from prehistory to historical periods.

We welcome multidisciplinary contributions on the following questions (but not limited to):

- How urbanization modified the local environment
- How the local environment influenced local urbanization
- How local communities adapted to often harsh semi-arid environments and (re)adjusted urban strategies
- How water management planning, in and around urban areas, has shaped the local environment and what consequences intensive agriculture has brought

We would like to explore and analyze the topic with a holistic approach, and we encourage papers from different fields, including (but not limited to) remote sensing, geoarchaeology, architecture, archaeology, and history. The main aim of the session is to expand our knowledge on this subject and connect scholars from different (sub)fields studying Central Asia and Iran, and to have the opportunity to discuss and explore new constructive approaches.

ABSTRACTS

1 BRONZE AGE ECOLOGY IN SOUTHEASTERN IRAN

Abstract author(s): Ebrahimiabareghi, Setareh (University of Bern)

Abstract format: Oral

All human cultural activities are shaped by geographical and ecological conditions. According to this perspective, cultural behavior is influenced by both natural and social environments. In Iran, at the beginning and the middle of the late Holocene, suitable climatic conditions emerged, and civilizations that flourished in the desert areas, such as Shahr-i Sokhta in Sistan and Konar Sandal in Halil Rud Valley, strongly depended on the climate and environment.

Despite numerous archeological studies in the southeastern region of Iran, the environmental changes during the Bronze Age have not yet been extensively considered in this area. The research I would like to present aims to reconstruct the ecological condition of the region during this period and the influential factors in the cultural transformations of the settlements. It will develop an understanding of the Bronze Age environment by using analytical methods that are based on evidence, such as seals, pottery, figurines, bone, and plant remains in the Sistan plain. The analysis of the findings indicates that droughts and crop failures have been caused by sediment accumulation in the plain, as well as changes in riverbeds due to frequent droughts, arid climate, low precipitation, lack of groundwater, and strong winds.

2 URBAN PLANNING AND ENVIRONMENTAL CONSTRAINTS IN THE MURGHAB (SOUTHERN TURKMENISTAN) DURING THE MIDDLE AND LATE BRONZE AGE

Abstract author(s): Arciero, Roberto (Leiden University)

Abstract format: Oral

While proto-urban development characterized the Kopet-Dag region (southern Turkmenistan) since the early 4th Millennium BCE, it is only from the Middle Bronze Age (late 3rd- early 2nd Millennium BCE) that urban expansion took place in the Murghab region as well. This expansion gave rise to the Bactria-Margiana Archaeological Complex (also known as Oxus Civilization or Greater Khorasan Civilization) that expands over southern Turkmenistan, northern Afghanistan, and as far as northeastern Iran, southwestern Uzbekistan and south Tajikistan. From Middle Bronze Age onwards, the core region of the Murghab started to be characterized by large sites, such as Gonur Depe, with a complex planning, including fortresses and large defensive walls with massive towers. Early Soviet research mainly concentrated on the excavations of main sites such as Kelleli or Auchin. As a result, landscape investigations and how the local environment played a role in the urban strategies system remain poorly understood. Likewise, how water resources shaped the local settlements system is still an underresearched topic.

This paper aims to focus on the hydrological landscape and how environmental constraints shaped urban and rural settlements and their agricultural practices. I will focus on the urban areas of the Murghab and their water systems, like natural channels and canals. Likewise, I will explore water relations in terms of water management policy between local communities in the region. Scholars have long argued for possible centralized management of the water systems in urban centers. However, managing large irrigation systems may take different forms, and centralized control is just one of the alternatives. As such, I will use a multidisciplinary approach, including archaeological evidence and ethnographic sources that can broaden our understanding of the water management relationship in the 3rd and 2nd millennium BCE, and how it influenced the development of urban planning and settlement patterns in the region.

3 UNDERTHESANDS: TANDEM-X, MULTI-TEMPORAL SENTINEL, AND HEXAGON SATELLITE IMAGERY IN THE STUDY OF THE MURGHAB'S IRRIGATION LANDSCAPE

Abstract author(s): Bulawka, Nazarij - Orengo, Hèctor (Landscape Archaeology Research Group, Catalan Institute of Classical Archaeology)

Abstract format: Oral

Landscape undergoes long-term social-natural co-evolution (McGlade 2005, 460), particularly evident in the alluvial plains where irrigation has been initially practised as a human adaptation to natural hydrology, eventually leading to significant landscape modification (Wilkinson, Rayne, and Jotheri 2015). This makes the study of irrigation landscapes challenging and necessitates using innovative methods, like those proposed by UnderTheSands (HORIZON-MS-CA-2021-PF-01-101062705), funded by The European Union.

UnderTheSands will utilize multiple data sources and techniques, including remote sensing, terrain analysis, hybrid machine/deep learning methods, archaeomorphology, spatial correlation indices, and historical research (including multispectral imaging, synthetic aperture radar, and TanDEM-X (DEM_HYDR3723)). The Google Earth Engine program enables the project to incorporate multi-temporal images into most workflows, allowing for the efficient processing of large amounts of data.

The paper presents the selected results of the UnderTheSands project in the studies of the Murghab river's alluvial fan in southern Turkmenistan. The area has been the subject of investigations by The Archaeological Map of the Murghab Delta, Ancient Merv Project, and TAP - Togolok Archaeological Project, resulting in the discovery of over 1700 sites from various periods. Research suggests that the first settlements in the area are dated to the Early Bronze Age (ca. 2800-2400 BCE), but the significant occupation started in the Middle Bronze Age (2400-1950 BCE). Its landscape underwent a gradual transformation due to irrigation - particularly during the Iron Age (ca. 1350-300 BC), Parthian (247 BC-224 AD), Sasanian (224-651 AD), and Islamic periods, which makes it particularly interesting for landscape studies. The paper focuses on the eastern part of the delta and employs multi-temporal satellite imagery and digital elevation models to examine the fluvial transformation and the remains of ancient irrigation systems related to the Iron Age settlement pattern (Gubaev et al., 1998; Salvatori et al., 2008).

4 HUMAN IMPACT ON ARID/SEMI-ARID ENVIRONMENTS: MIXED URBANIZATION IN THE WATER SYSTEMS OF MURGHAB (SOUTHERN TURKMENISTAN) AND KARAKUL (WESTERN UZBEKISTAN) RIVERS

Abstract author(s): Cerasetti, Barbara (ISMEO – The International Association for Mediterranean and Oriental Studies)

Abstract format: Oral

Since ancient times, Central Asia and neighboring Iran have been affected by profound climate changes. The consequent radical transformations of the territory by human beings to survive have strongly endangered the delicate ecosystem of these geographical areas, often with catastrophic effects.

During the 2nd millennium BCE, urbanization extensively modified and deeply influenced the local environment of vast water systems, from Helmand in Iranian Sistan to Murghab in prehistoric Margiana, and Karakul to the west of Bukhara region. A specific aspect of this phenomenon deserves to be taken into consideration, i.e. the resulting settlement pattern after the “distribution” of territories between GKC (Greater Khorasan Civilization) and Andronovo-related populations in the alluvial fan of the Murghab River (southern Turkmenistan) and the fossil system of Makhan-darya (western Uzbekistan). In particular, how the spatial interaction (intra/off-site) between these two cultures has been deeply influenced by the difficult adaptation of the techniques, known at that time, to the exploitation of water and primary resources.

5 FROM CITIES TO VILLAGES: ADAPTATION STRATEGIES OF IRON AGE SOCIETIES. CASE STUDY IN THE PASHKURT VALLEY

Abstract author(s): Lhuillier, Johanna (CNRS)

Abstract format: Oral

The transition from the Bronze Age to the Iron Age (around 1500 BCE) shows in Central Asia a somewhat counter-intuitive evolution of the urbanisation process, the Bronze Age cities being abandoned in favour of a more extensive settlement through a network of small villages. Both the increasing number of Iron Age sites and the extension of the territory covered show a relationship to the environment now based on extensive exploitation of a larger territory. Through the example of the Pashkurt valley in southern Uzbekistan, we will question the means implemented by local communities to adapt to a semi-arid environment. Several fortified sites dating from this period have indeed been identified in this area and constitute the only known habitat in an altitude zone. Studies on settlement pattern, architectural techniques, and management of water resources are approached through a multidisciplinary approach combining archaeology, geomagnetic prospection, geoarchaeology and archaeo-botany. We will discuss the processes of socio-economic and environmental adaptation that follow this cultural transition in order to identify avenues of reflection on the evolution of the relationship with the environment of protohistoric societies in Central Asia.

6 HUMAN IMPACT ON LOWLAND LANDSCAPE OF SOUTHERN CENTRAL ASIA IN PROTOHISTORY: CASE OF THE SHERABAD RIVER BASIN, SOUTH UZBEKISTAN

Abstract author(s): Stanco, Ladislav (Charles University) - Petřík, Jan (Masaryk University)

Abstract format: Oral

Being sparsely populated in prehistory (in both the Bronze and Early Iron Age), the Sherabad Plain undergone substantial change during what is called Protohistory (Greco-Bactrian and Kushan periods according to the local terminology). This very period bore witness to emergence of the first larger urban centres in northern Bactria, while rural settlements in their hinterlands mushroomed along the newly constructed water canals. These developments caused population growth, increasing social complexity, but also affected heavily the so-far largely undisturbed natural landscape.

The results of OSL dating of floodplain sediments indicate a geomorphological change in the first millennium BCE, and this change could be related to gradually increasing pressure on the landscape due to factors such as agriculture and deforestation, in addition to climatic development and tectonics. Further studies of floodplain sediments will investigate pedological development and weathering indices to indicate changes in climatic conditions.

In this contribution, we also aim to test previous hypotheses regarding the extent of human intervention in the lowland landscape of southern Central Asia during Protohistory, using newly available data on water canals and settlements in the Sherabad River basin of South Uzbekistan. Hexagon high-resolution aerial imagery will be utilized in testing the extent of human impact on the landscape. The Sherabad Plain was selected as the testing area due to its extensive study by our team, which has provided a complex set of basic data.

7 ENVIRONMENTAL (MIS)MANAGEMENT AND URBAN SUSTAINABILITY IN THE OTRAR OASIS, KAZAKHSTAN

Abstract author(s): Campbell, Katie (University of Cambridge)

Abstract format: Oral

Sustaining urban populations requires careful management of agricultural resources, and a level of flexibility to respond to political shocks, environmental change, and natural disasters including plague, earthquakes and floods. In the oases of Transoxiana, large, abandoned medieval cities testify to a breakdown in the capacity of an urban population to sustain themselves, although at present sparse data exists to confidently explore the causes of this. Contemporary accounts see the Mongol conquest, shifting water sources and nomadic raiding as a primary reason for medieval urban abandonment, but these narratives mask a complex situation, which demands a variety of approaches.

Environmental decline or mismanagement is both a likely contributor to urban decline in these space-limited oases, and a salient current issue. Focussing on the abandoned city of Otrar (Farab) on the Syr Darya, I will outline present evidence for environmental and urban management in the city and its hinterland, and introduce approaches which might provide data for a more coherent narrative of the changing environment between the 12th and 15th centuries. Urban stratigraphy is used to date population decline in the city and explore how the urban space was managed, as well as demonstrating the manner of its abandonment. In the broader oasis, reservoirs, canals and extensive irrigation networks testify to the importance of water management for washing, agricultural and industrial purposes, and ongoing work is providing primary data for shifts in water provision and their causes. Finally, charred seeds can provide an insight into crop choices and subsistence strategies of the inhabitants of Otrar and may show not only a decline but also a response to changing environmental circumstances.

8 TOWARDS A SLOW SCIENCE OF THE ARAL SEA

Abstract author(s): Brite, Elizabeth (Purdue University)

Abstract format: Oral

Scientific attention to the Aral Sea intensified and was sustained in the decades following the collapse of the Soviet Union as a shared concern emerged about the sea's disappearance. Beginning in the 1990's, recession of the Aral Sea's shoreline was widely and publicly understood as a representation of global climate change, and it produced a host of scientific and humanistic practices to recount, monitor, temporalize, track, and admonish human impacts across millennia. This discourse differed markedly from earlier studies on Aral Sea human-environment relations produced primarily by Soviet archaeologists. Drawing on Isabelle Stengers' concept of "slow science," this paper pauses to re-examine the pursuit of anthropogenic facts about the Aral Sea, giving thought to whether researchers from different epistemological traditions maintain disparate concerns about the Aral Sea's long-term relations with humanity. The case of Istemes Lake, a terminal lake within the Aral Sea Basin and adjacent to the archaeological site of Akchakhan-kala, is offered as an example of the ways that empirical validation may be inadequate to settle these differences in approaches towards environmental archaeology in the 21st century. More generally, before we get to answers about human impacts on the environments of Central Asia, this paper considers first why archaeologists ask these questions to begin with, and whether we are failing to perceive significant differences among us and thus the possibilities for greater multivocality.

9 WATER MANAGEMENT SYSTEM OF HARAPPAN CIVILIZATION

Abstract author(s): Kumar, Dr. Pardeep (Assistant Professor , Deptt of History, Kanya Mahavidyalaya Kharkhoda , Sonipat ,Haryana) - Navneet, Navneet (Research Scholar, Jamia Millia University New Delhi)

Abstract format: Oral

Harappan civilization is one of the most prominent cultures in ancient world's Bronze Age. Harappan civilization in Indian sub continent has led to numerous innovations in water management technique. Water is the basic necessity of human life which helps to develop of a culture. If we draw the settlement pattern of this civilization we find that most of the sites of this culture are situated at the banks of rivers. Hydrologic knowledge of this civilization starts developing since 2750 B.C. – 1750 B.C. Harappan people are famous for their civil engineering especially in town planning and water management. The aim of this paper is to understand the water management system of Harappan civilization. Some excavated sites of this culture will study to explain it. Archaeological reports of few sites such as Mohenjo-Dararo, Harappa, Dholavira, Lothal, Rakhigarhi and Kalibanga have been published. Most of the sites of this culture have technical drainage system, water storage, irrigation and water harvesting techniques. All the aspects of water management system will be studied with the help of new modern tools of documentation. The comparative method will be used for the study civil engineering features. Here we have discussed specially about water management system of this culture. After research we able to learn a lot about the techniques of these people and will be utilised for future research & projects.

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Val-Peón, Cristina (Institute of Neotectonics and Natural Hazards, RWTH Aachen University) - Ochando Tomás, Juan (Dipartimento di Biologia Ambientale, Sapienza University of Rome) - Fernández-García, Mónica (Grupo de I+D+i EVOADAPTA - Evolución Humana y Adaptaciones durante la Prehistoria, Dpto. Ciencias Históricas, Universidad de Cantabria)

Session format: Regular session

Neanderthals inhabited Eurasia during more than 300.000 years, being able to adapt to different ecological areas and diverse climatic conditions. Climate has always been considered a key factor influencing biogeographical rearrangement. Environmental changes may have played a fundamental role in the distribution of plant and animal communities, the availability of resources, and migration scenarios, thus affecting Neanderthal's adaptive behaviour.

Neanderthals have traditionally been regarded as a species adapted to cold conditions, whereas the wide biogeographical area over which they spread and the vast period of time during which they lived seem to show a more complex reality. Another controversial issue is related to the causal factors that led them to their disappearance, given that this can be framed within a period of critical climatic episodes.

The Mediterranean region has been the subject of several studies in recent years, as it has been considered a biodiversity hotspot with a wide complexity of landscapes and habitats that may have acted as a refuge during periods of climatic instability. These characteristics may have been decisive for Neanderthal populations to settle and endure in this region, as reflected by the existence of several archaeological sites spanning from MIS5 until the progressive extinction of these populations in southern Iberia during MIS3. Is this endurance over time a consequence of a relatively stable climate and environmental conditions compared to other regions with more extreme habitats, or are there other causes behind this?

In this session, we would like to create a forum to discuss recent research and advances about the diverse environments Neanderthals inhabited across Southern Eurasia and their peninsulas in the Mediterranean context, covering different biogeographical areas and chronological periods. Interdisciplinary studies focused on bioarchaeological remains, such as palynology, anthracology, large and small mammal paleoecology or biomolecular approaches (stable isotopes; ZooMS) are welcome.

ABSTRACTS

1 BALKAN NEANDERTHALS: THE UPPER-PLEISTOCENE PALAEOECOLOGICAL SEQUENCE OF PEŠTURINA CAVE (NIŠ, SERBIA)

Abstract author(s): Ochando Tomás, Juan (University of La Sapienza) - Carrión, José (University of Murcia) - Magri, Donatella (University of La Sapienza) - Amorós, Gabriela (University of Murcia) - Di Rita, Federico (University of La Sapienza) - Munuera, Manuel (Polytechnic University of Cartagena) - Marín Arroyo, Ana (University of Cantabria) - Bogičević, Katarina (University of Belgrade) - Roksandic, Mirjana (University of Winnipeg) - Mihailovic, Dusan (University of Belgrade)

Abstract format: Oral

The Central Balkans appear as a key biogeographical region in Southern Europe, in a central European-Mediterranean climate context, which served as a refugium and as a propitious territory for the dispersion and migration of both Neanderthals and modern human populations. This study presents pollen analyses on sediment samples and hyaena coprolites from Pešturina Cave, Central Balkans, with the aim of depicting the vegetation landscapes of Balkan Neanderthals and modern humans during the Mid-Upper Paleolithic (MIS 5e-3). Semi-forested environments prevail from the beginning of the sequence MIS 5e-5c (archaeological layers 4c and 4b) to MIS 5b-5a (layer 4a) characterized by Pinus, evergreen and deciduous Quercus, Tilia and woody legumes, accompanied by heliophytes such as Artemisia and Poaceae. During MIS 4-3 (layers 3-2) the vegetation is dominated by Artemisia-Poaceae steppes with Quercus patches, conifers and woody legumes. Apart from these major components, other palaeoecologically meaningful taxa are found, including Juniperus, Acer, Alnus, Betula, Carpinus betulus, Ostrya, Castanea, Corylus, Fagus, Juglans, Fraxinus, Salix, Ulmus, Buxus, Ilex, Olea, Phillyrea, Pistacia, Erica, Cistaceae and Rosaceae, among others. The Upper Pleistocene vegetation obtained from pollen records in Pešturina Cave depicts a mosaic of landscapes embracing mesophytes, thermophytes, xerophytes, and Mediterranean elements. Neanderthals and early Upper Palaeolithic people lived in a highly diverse refugium, probably offering opportunities for survival during the cold stadials of the Pleistocene.

2 SMALL MAMMAL ASSEMBLAGES USED TO RECONSTRUCT PAST ENVIRONMENTAL CONDITIONS WHERE NEANDERTHALS LIVED IN SOUTHERN EUROPE

Abstract author(s): López-García, Juan Manuel (Institut Català de Paleoeologia Humana i Evolució Social - IPHES; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Berto, Claudio (University of Warsaw, Faculty of Archaeology) - Lebreton, Loïc (Institut de Paleoeologia Humana i Evolució Social - IPHES)

Abstract format: Oral

The environmental and climatic evolution of the Middle Paleolithic (late Middle Pleistocene to Late Pleistocene) of Southern Europe is determined for Marine Isotope Stage 7 (MIS 7) to MIS 3 on the basis of a study of the small-mammal (insectivore, bat and rodent) assemblages. This work provides a synthesis of previously published sets of environmental and climatic data from various Middle Paleolithic sites, such as Lazaret cave in France, Cova del Gegant in Spain or Fumane cave in Italy, all of which are located in the European western Mediterranean region. Using the habitat weighting method and the bioclimatic model to reconstruct the environment, temperature and rainfall, the results show great variability in the landscape and climate of the area. However, the various layers from the studied sites in which the human presence is more intense coincide with landscapes dominated by woodland formations in mild climatic conditions. A comparison of our results with those from other sites with studies of small mammals in Italy, southern France and the Iberian Peninsula reveals the same pattern, showing that the hominins that inhabited the western Mediterranean region in the late Middle Pleistocene and Late Pleistocene were closely related to forested area.

3 THE LATE NEANDERTHALS IN NORTHERN IBERIA: CLIMATE AND SEASONALITY BASED ON OXYGEN STABLE ISOTOPE FROM UNGULATES TEETH

Abstract author(s): Fernández García, Mónica (1 Grupo de I+D+i EVOADAPTA - Evolución Humana y durante la Prehistoria, Dpto. Ciencias Históricas, Universidad de Cantabria) - Pederzani, Sarah (Instituto Universitario de Bio-Orgánica Antonio González, Universidad de La Laguna; Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology) - Britton, Kate (Department of Archaeology, University of Aberdeen; Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology) - Fourel, François (Univ Lyon, Université Claude Bernard Lyon 1, CNRS, ENTPE, UMR 5023, LEHNA, F-69622) - Lécuyer, Christophe (Univ Lyon, Univ Lyon 1, ENSL, CNRS, LGL-TPE, 69622) - Marín-Arroyo, Ana (1 Grupo de I+D+i EVOADAPTA - Evolución Humana y durante la Prehistoria, Dpto. Ciencias Históricas, Universidad de Cantabria)

Abstract format: Oral

This work focuses on the analysis of the oxygen isotope composition ($\delta^{18}\text{O}$) on ungulate tooth enamel recovered in three northern Iberian archaeological cave sites: El Castillo (Cantabria), Axlor (Vizcaya), and Labeko Koba (Guipuzcoa). Through the biochemical analysis of 22 bovine and 17 equid teeth, found in radiocarbon-dated archaeological levels, a high-resolution reconstruction of the past climatic conditions connected to human activity has been obtained. This climate reconstruction is based on the double relationship between $\delta^{18}\text{O}$ in environmental water and $\delta^{18}\text{O}$ in mammal body tissues, especially in obligate drinkers, as well as $\delta^{18}\text{O}$ in environmental water and past air temperatures. The analyses of the phosphate fraction on tooth enamel, combined with carbonate analysis, provide a reliable signal to estimate paleotemperatures. Combining the three archaeological sites that included the cultural technocomplexes of Mousterian, Châtelperronian, Transitional Aurignacian, and Aurignacian, we estimate the climatic evolution from 50,000 to 35,000 cal BP. The climatic characterization of this period is a clue to evaluate the late Neanderthals' subsistence strategies in northern Iberia, where their disappearance occurred earlier than in other parts of Iberia. Moreover, combining our results with recent regional climatic reviews based on archaeofaunal and archaeobotanical proxies (mainly, small-mammals and pollen), as well as the Net Primary Productivity reconstruction, results indicate that a cold and arid climatic phase was experienced in this region during this human replacement.

4 FUEL AND FIRE: THE FIRE RECORD AS AN ARCHIVE OF NEANDERTHAL BEHAVIOUR AND THEIR ECOLOGICAL ENVIRONMENT

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Abstract format: Oral

Firewood is the main fuel used by Neanderthals during the Middle Palaeolithic. The abundance or scarcity of fuel conditions human groups' relationship with fire. The pyroarchaeological record -fire record in archaeological sites- is a key archaeological aspect for understanding Neanderthal behaviour and environmental conditions.

In this work, we focus on the importance of understanding the surrounding vegetation, potentially used as fuel, to understand fire management by Neanderthals. The results are based on the phytolith and charcoal record documented in the late Middle Palaeolithic levels of Cova Gran de Santa Linya (Les Avellanes, Lleida). We will evaluate the potential of each analysis, the limits, and the complementarities between disciplines when dealing with the use of fuel and fire.

The obtained results indicate similar patterns in fuel use, wood was selected as the main fuel, and more precisely montane pine wood. This indicates that the selection criteria was possibly based on the most abundant and available wood, showing no scarcity periods and the presence of a forest of cryophilous pines in the surroundings. Along with the use of wood, the phytolith results showed the use of grasses, complementing the results of anthracology with the identification of non-woody plants, providing us with a more complete picture of exploitable plant resources and fire management.

This study suggests that the availability of wood resources was determinant in the occupation and probably condition the mobility patterns of human groups. The analysis of the pyroarchaeological record can also be a way of approximating the settlement patterns and forest environment by Neanderthals groups.

5 PALAEOVEGETATIONAL CONTEXT OF NEANDERTHAL OCCUPATIONS AT THE ARCHAEOLOGICAL SITE OF EL SALT (SE IBERIA)

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Abstract format: Oral

The period spanning from Marine Isotope Stages 4 to 3 has been characterised by millennial to centennial changes between cold-dry and moist-warm periods. Rapid climate changes have been recorded in continental and marine deposits, as well as correlated with Greenland Stadials and Interstadials. Nevertheless, while some natural sites evidenced open landscapes for these critical times, different archaeological sites documented the presence of mixed forests for the same chronologies in Western Mediterranean.

The Iberian Peninsula has been considered a refugium in moments of climatic instability during this period (71-29 ka BP), which may have been crucial for Neanderthals to settle in this territory until their disappearance. Thus, it is of great importance to explore past environments from a local-regional perspective and on a small time scale.

In this paper, we present the palynological results and evaluate the preservation potential of palynomorphs from different profiles of El Salt, emphasizing the importance of identifying possible biases caused by taphonomic factors that may affect the reconstruction of the palaeovegetation.

The first approach to the study of the palaeovegetation at the archaeological site of El Salt was carried out by Dupré. Since then, new samples have been collected in recent campaigns to better contextualise the palynological data within the framework of the last environmental studies at the site. Preliminary results show the existence of mixed Mediterranean forests alternating with some periods in which xerophytic vegetation increased. Because some samples were sterile and others contained poorly preserved pollen grains, taphonomic alterations were also recorded.

6 INVESTIGATING THE HYDROCLIMATE CONDITIONS AT THE MIDDLE PALAEO-LITHIC SITE OF EL SALT (EASTERN IBERIA) USING GEOCHEMICAL PROXIES

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Abstract format: Oral

The Iberian Peninsula is a key region for investigating Neanderthal-climate interactions due to its extensive archaeological record and its role as a Late Pleistocene refugium. However, our paleoclimate knowledge from that time largely relies on data obtained from high resolution geological records, poorly linked to the archaeological evidence. Here, micro contextually-sampled sediments from the stratigraphic units XIII, XII, XI and X at the Middle Palaeolithic site of El Salt (Eastern Iberia) (ca. 81.5 - 52.3 ka BP) has been analyzed for lipid biomarkers (n-alkanes), stable isotopes ($\delta^{13}\text{C}$ and δD values of n-alkanes, and $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ values of carbonates), and bulk geochemistry (LOI, XRF) with the aim of gaining information about the paleoclimate context of the site at the onset of the last glacial period. Our data allowed us to identify a tentative arid episode at the base of the sedimentary sequence (SUs XIII and lower XII) coinciding with the first Neanderthal occupation of the site after the end of MIS 5, and a general humid phase between SUs upper XII and X, where rich archaeological assemblages have been identified. These hydroclimate shifts are probably linked to the Dansgaard-Oeschger suborbital climate fluctuations that occurred largely during the last glacial period. These results highlight the usefulness of the micro-contextual and multi-proxy approaches for reconstructing the paleoenvironmental conditions in archaeological settings, and show potential for tracking the Neanderthal behavioral responses to the rapid and harsh climate shifts of the Late Pleistocene.

7 HIGH-RESOLUTION VEGETATION AND CLIMATE CHANGES DURING HEINRICH STADIAL 4 IN THE ALBORAN SEA: IMPLICATIONS FOR THE SCENARIO OF NEANDERTHAL EXTINCTION

Abstract author(s): Charton, Liz - Combourieu-Nebout, Nathalie (Histoire Naturelle de l'Homme Préhistorique, UMR 7194 CNRS, Muséum national d'Histoire naturelle) - Bertini, Adele (Dipartimento di Scienze della Terra, Università degli Studi di Firenze) - Sassoon, Dael - Lebreton, Vincent (Histoire Naturelle de l'Homme Préhistorique, UMR 7194 CNRS, Muséum national d'Histoire naturelle) - Peyron, Odile (Institut des Sciences de l'Évolution de Montpellier, UMR 5554 CNRS, Université de Montpellier)

Abstract format: Oral

Climate changes recorded during the last glacial period are believed to have impacted human population dynamics in Mediterranean Europe, forcing late Neanderthals towards the southern refugia of the peninsulas during less favourable periods. Heinrich Stadials (HS) represent the most severe expression of these climate oscillations, associated with a fast spread of semi-desertic vegetation characteristic of dry and cold climatic conditions in the Mediterranean area. The marine sequence from the Leg 161 site ODP 976, located in the Alboran sea (South-Eastern Spain), has continuously recorded regional environmental changes of the last climatic cycle. Here, we present the results of palynological analyses and quantitative climatic reconstructions for Heinrich Stadial 4 (HS4, ~39–38.5 ka BP) with extremely high-resolution of up to 20 years. The pollen data show a severe transition, at centennial scale, from interstadial to Heinrich Stadial vegetation, characterized by the dominance of semi-desertic taxa ('Artemisia', 'Ephedra', Chenopodiaceae). Then, the temperate forests expansion characteristic of Dansgaard-Oeschger interstadial DO 8 is also very quick. Climate changes reconstructed from a multimethod approach (MAT, WAPLS, and machine learning as BRT) show a different pattern during HS4, with strong changes in the seasonal precipitation. This arid climatic episode

has long played a central role in the debate on Neanderthal's demise, representing either a final blow or an ultimate favourable window for the last Neanderthals. Population and adaptive changes based on late Middle and Early Upper Palaeolithic sites in the Iberian Peninsula are discussed in light of these high-resolution palaeoecological changes. This study highlights the necessity to establish (1) an accurate chronological frame for the timing of late Neanderthal occupations of Mediterranean Europe, (2) high-resolution palaeoenvironmental reconstructions to assess the impact of rapid climate variability on Neanderthal populations.

316 MOUNTAINS AS INTERACTION ZONES – HUMAN IMPACT ON THE ALPINE LANDSCAPE THROUGH TIME

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Marti, Cynthia (University of Bern, Institute of Archaeological Sciences) - Nicolis, Franco (Soprintendenza per i beni culturali, Ufficio beni archeologici, Trento)

Session format: Regular session

Mountains were at no time an insurmountable barrier, but rather a lively cultural landscape allowing connections between the areas inside and outside the alpine zones. Humans have interacted in mountainous regions since the Palaeolithic and adapted their way of subsistence to the sensitive ecosystem, showing that this supposedly inhospitable landscape has always been an attractive living and economic space, holding a rich archaeological heritage today. Pasture and livestock farming have dominated the alpine areas since the Neolithic, as well as the mining of raw materials such as copper or rock crystal. Furthermore, the spiritual perception and ritual use of alpine landscapes should not be underestimated. Archaeological sites can therefore be found at all altitudes from the valleys up to the high mountains. Nevertheless, many of these sites are threatened by natural forces such as erosion, relocation or flooding and the melting of glaciers and permafrost caused by climate change. During the last few years, numerous objects melted from the ice were reported, revealing historical and archaeological finds, ranging from Mesolithic artefacts to remains of the World Wars. This increases data and knowledge on alpine land use in the past but at the same time drives their destruction, once they are exposed to environmental forces. Thus arises the question, of how archaeologists can research and preserve the archaeological heritage in light of environmental changes? The aim of the session is a diachronic discussion on the human impact on the alpine landscape in a long-term perspective, starting with early land use by Late Palaeolithic hunter-gatherers up to archaeological and historical finds from the 20th century. We are looking forward to papers on past and future land use and management, pastoralism, mobility and mining of raw material in the Alps and other mountain ranges in Europe.

ABSTRACTS

1 IMPACT AND RESILIENCE: HUMAN – ENVIRONMENT INTERACTIONS IN THE HIGH AREAS OF THE CENTRAL PYRENEES THROUGH THE HOLOCENE

Abstract author(s): Obea Gómez, Laura - Gassiot Ballbè, Ermengol - Barba Pérez, Marcos (Group of High Mountain Archaeology. Department of Prehistory. Autonomous University of Barcelona) - Clemente Conte, Ignacio (Group of High Mountain Archaeology. Department of Prehistory. Department of Archaeology and Anthropology. Institution Milà i Fontanals – CSIC) - Díaz Bonilla, Sara (Group of High Mountain Archaeology. Department of Prehistory. Autonomous University of Barcelona) - Garcia Casas, David (Group of High Mountain Archaeology. Institute of Heritage Sciences. Spanish National Research Council) - Rey Lanaspá, Javier (Group of High Mountain Archaeology) - Rodríguez Anton, David (Group of High Mountain Archaeology. Catalan Institute for Human Palaeoecology and Social Evolution) - Salvador Baiges, Guillem (Group of High Mountain Archaeology. Department of Prehistory. Autonomous University of Barcelona)

Abstract format: Oral

Recent archaeological research illustrates that the Pyrenees was not an unoccupied area throughout prehistory. From the end of the Pleistocene, and much more intensely in the Holocene, different areas of the massif hosted human occupations that gained altitude as the glaciers retreated. Thus, throughout the Holocene, practically all the altitudinal stages of the mountain range have been frequented by human groups, initially foragers and later linked to other economic activities, such as livestock farming, mining and even agriculture. In a complementary way, advances in palaeoecological and palaeoenvironmental research also show that during the same period mountain and high mountain ecosystems change over time, with dynamics that cannot always be explained by natural causes alone.

In this paper we present, from a long-term perspective, the archaeological and palaeoecological sequences of the central Pyrenees during the last 10.000 years. Through them, we analyse the main phases of human occupation, the environmental conditions in which they took place and their effect mainly on vegetal landscapes, increasingly noticeably from the end of the Neolithic. Thus, we address the signs of fires, the increase in pastures, the decrease in forest

biodiversity or the presence of cereals and their relationship with the different periods of human occupation within the Holocene climatic variability. Understanding these past interactions should contribute to the debate on the use and human occupation of high mountain environments that have changed over time and are currently affected by new exploitation models (e.g. linked to skiing and second homes) and global climate change.

2 TRACING CLIMATE AND HUMAN IMPACT IN MOUNTAIN PEATLANDS: FROM THE 8.2 KA EVENT TO LAND USE IN THE CENTRAL ALPS

Abstract author(s): von Scheffer, Clemens (Geography and Environment, School of Geosciences, University of Aberdeen; Institute for Ecosystem Research, Christian-Albrecht University) - De Vleeschouwer, François (Inst. Franco-Argentino para el Estudio del Clima y sus Impactos - UMI IFAECI/CNRS-IRD-CONICET-UBA, Dpto. de Ciencias de la Atmosfera y los Océanos, FCEN, Universidad de Buenos Aires) - Le Roux, Gaël (Laboratoire Écologie Fonctionnelle et Environnement, Université de Toulouse, CNRS, Toulouse INP, Université Toulouse 3 - Paul Sabatier - UPS) - Unkel, Ingmar (Institute of Geography, Heidelberg University; Institute for Ecosystem Research, Christian-Albrecht University)

Abstract format: Oral

Where archaeological sites get overprinted or destroyed over the course of millennia or objects give only isolated evidence for a certain moment in time, sedimentary archives, like cores from lakes or peatlands, can fill gaps and provide continuous records of environmental change from either human impact or climate. However, it can be challenging to decipher between human and natural drivers when looking at pollen or geochemical proxies only, which is when, in turn, archaeological or historical evidence can provide missing pieces of the puzzle.

Our study uses sedimentological and quantitative geochemical proxies, measured with inductively coupled plasma - mass spectrometry and portable X-ray fluorescence scanning, to trace episodes of increased inputs of mineral matter and metals (Pb, Cu, Sb) in several contrasting peatlands of three different areas in the Central Alps: Fimba Valley/ Val Fenga (2400 m asl), Piller Sattel (1500 m asl) and Kleinwalsertal Valley (1100 m asl). What they have in common is their proximity to places of archaeological relevance, like bronze hoards, ritual sites, pastoralist structures or potentially mined natural resources. While climatic signals appear to be well registered at high altitude, our high-resolution geochemical data reveals anthropogenic signals emanating from erosive land use and landscape change (e.g. forest clearances, pastoralism), but also from local or regional mining or metallurgy. Especially over the past 1500 years, our records also suggest interactions between climate and human activity during colder episodes in the Central Alps.

3 THE ENGSTLIGENALP IN THE BERNE ALPS - THE DIACHRONIC VIEW OF AN ALPINE LANDSCAPE

Abstract author(s): Marti, Cynthia (Archäologie Schweiz; University of Bern) - Hafner, Albert - Hinz, Martin - Heitz, Caroline - Brunner, Mirco (University of Bern)

Abstract format: Oral

In 2018 the Institute of Archaeological Sciences of the University of Bern, in collaboration with the Institute of Archaeology of the University of Zurich, held the first Swiss International Summer School for Alpine Archaeology (SISA). The summer school usually consists of workshops with external experts to discuss current research on archaeology in the Alps. Moreover, fieldwork is included in order to train practical excavation and prospection methods in (high) alpine area. This year's SISA will take place in the Bernese Alps, in Adelboden and on the Engstligenalp. The main topics of the Summer School are the Alps as a communication area as well as prospecting and excavation methods in high alpine terrain. The SISA is combined with preceding field research that will take place in a rock shelter above the Engstligenalp at around 2600 m asl. The Engstligenalp and the rock shelter is a hitherto archaeologically unexplored terrain, but one that shows great potential due to outstanding sites in the region like the nearby Schnidejoch pass and the Tierberg rock shelter. It is known from written sources that alpine farming has been practised on the Engstligenalp since the Middle Ages. The aim of the fieldwork is to trace the prehistoric usage of the alp, in order to create a holistic and diachronic view of land use on the alps and to record the area as a communication and interaction zone. In this presentation we will present the history of SISA, the event of the current SISA 2023 and the results of the fieldwork.

4 CENTRAL ALPS AS MOUNTAIN CULTURAL LANDSCAPES FROM PREHISTORY TO CONTEMPORARY PAST

Abstract author(s): Nicolis, Franco (Archaeological Heritage Office Trento)

Abstract format: Oral

The current framework of knowledge as it regards human occupation of the alpine environment in ancient times is no longer conditioned by the traditional image of poor, inhospitable areas inhabited by coarse, warlike peoples. The

prevailing picture today is of regions with considerable economic potential. A case study site will be presented where a series of clues have been found suggesting pioneering colonization of the high mountains between the end of the Early Bronze Age and the beginning of the Middle Bronze Age.

During the Late and Final Bronze Age (fourteenth century–eleventh century BC) the metal production and diffusion in Europe develops into a continental-size organized system. Within this frame a substantial copper metal production is observed in the highlands of the Trentino area, undoubtedly related to diffusion of the products within a larger area.

Today global warming is changing the alpine landscape. The melting of ice is bringing to light evidence of the human presence at high altitudes from prehistory to contemporary times. The icon of this phenomenon is Ötzi the Iceman. But a lot of other evidence is coming to light from the Alps, first of all the remains of the battlefields fought during the First World War.

5 THE RED GEMSTONE FROM THE HEART OF EUROPE. MINING OF THE EASTERN ALPINE GARNET IN MODERN TIMES

Abstract author(s): Zerobin, Bianca - Goldenberg, Gert (Institute for Archaeology, University Innsbruck)

Abstract format: Oral

Gemstones have fascinated people since earliest times. One gemstone that is particularly popular because of its red colour is the garnet in its varieties almandine and pyrope. Red almandine was mined commercially from the end of the 18th century until the early 20th century in the rear Zillertal in the Austrian Alps. At the Rosstrugg in the Zemmgrund the miners used black powder and dynamite to blast out the garnet bearing mica schist at an altitude up to almost 3,000 metres a. s. l. The heyday of garnet mining included the period of the „Little Ice Age“ around 1850. The stones were transported by sledges on the glacier. The miners' living and working huts were built from stone and wood on the sparse ice-free zones. The workforce of up to 18 men lived at 2,000 m a. s. l. throughout the summer and prepared the garnet by various methods. While the mining of the gemstone sometimes resulted in craters several metres wide being blasted out of the rock, further down next the workers' huts, dumps were created with finely piled up waste rock material (mica schist), remaining from the extraction of the garnet. In the huts the garnet was separated from its source rock by hand or by a water-driven stamp mill and further processed by roller mills. The tumbled garnets were then sold on to gemstone cutters especially in Bohemia, where they were used for jewellery. Together with the red garnets (pyrope) from the bohemian occurrences, the cutted alpine garnets were then marketed as „Bohemian Garnets“, a brand which became famous in Europe and also overseas. Nowadays, almost no one takes into consideration that parts of „Bohemian Garnet“ jewellery may also contain garnet from the former glacial region of the Eastern Alpine. But the evidence is there.

6 PASTORALISM, METALWORK AND LONG-RANGE NETWORKS: ACROSS THE EIA ABRUZZO APENNINE MOUNTAINS

Abstract author(s): Bevilacqua, Adriano - d'Ercole, Vincenzo (Università degli studi di Chieti-Pescara) - Di Giovanni, Andrea (Università degli studi di Roma)

Abstract format: Oral

The pastoral economy centred on the vertical transhumance typical of the Apennine and Alpine mountain valleys is applied in Protohistoric Abruzzo in a wool production-oriented manner, as the archaeozoological data show. Adaptation to this form of economy is evident in the archaeological record as clearly shown by the materials from the Iron Age necropolises of the Vestina Cismontana area, clearly the most ‚alpine‘ environment of the entire Apennine chain with the presence of the Gran Sasso massif, i.e. the highest peak of the Apennine chain and therefore of peninsular Italy. In particular, this is evidenced by several classes of materials such as mountain walking sticks, crampon boots and the unfortunately named omega hooks, which are now recognised as shoe fasteners.

The presence of these classes of materials highlights the mastery of the mountain environment by the peoples of northern protohistoric Abruzzo to such an extent that interchange with trans-Apennine environments was possible, as shown by the imports of material from Etruria (and beyond) present within the aforementioned necropolises, but it is the trade from the Adriatic world towards the Tyrrhenian world that is the most interesting, particularly in relation to the products of the particularly skilled and precocious vestina ironworks.

The picture outlined above shows how the inhabitants of the Vestine sector of L'Aquila experienced the mountains as an inestimable source of resources for their economy (sheep-farming and metallurgy), allowing us to understand how the mountains were perceived as a permeable barrier for culture and goods rather than an impassable border.

UNDERSTANDING LADAKHI POPULATION IN CONTEXT TO ITS ARCHAEOLOGICAL EVIDENCE, ADAPTATION TO HIGH ALTITUDE, AND GENETIC DIVERSITY

Abstract author(s): Dolma, Sonam (Deccan College Pune India)

Abstract format: Oral

Ladakh is a high-altitude cold desert in India, landlocked with the highest mountain ranges in the world. It encompasses the Great Himalayan, Ladakh Range, Zaskar Range, and Karakoram. Geographically, the Great Himalayas acts as a buffer from the western monsoon thus allowing inadequate precipitation and causing extreme aridity. However, such harsh rugged terrain and inhospitable environmental settings did not hinder humans in the past to inhabit this territory. The prolonged exposure to extreme environmental conditions, low temperature, and hypoxia are reflected in the genetic adaptation to high altitude. Previous studies on how hypoxia directly affects human growth have been extensively investigated. Also, studies exhibit genetic transmission and eventual admixture of the population from the surrounding geography. In fact, later in time, Ladakh was a nexus point for trade for many centuries, connecting East Asia to West Asia and Central Asia to South Asia, witnessed cultural diffusion, genetic exchange, and demographic movements resulting in a rich multiethnic history. The descendants of these early settlers have been exposed to population admixture, comprising the Tibetan ancestry, Dardic population, and blend of neighboring Indo-Aryan populations reflected in the genetic data examined from a few handfuls of research.

A CONTROLLED VOCABULARY FOR ARCHAEOLOGY: A NECESSARY REQUIREMENT FOR THE DEVELOPMENT OF A SUSTAINABLE RESEARCH PRACTICE INTO THE 21ST CENTURY

Session theme: 3. Heritage Narratives and Representations

Session organisers: Sinclair, Anthony (University of Liverpool) - Aitchison, Kenneth (Landward Research Ltd; University of Liverpool) - Brughmans, Tom (University of Aarhus)

Session format: Discussion session

Do archaeologists need a controlled vocabulary?

Controlled vocabularies are agreed sets of single- or multiple-word phrases used as key terms for elements of research. These exist for other disciplines, such as psychology, chemistry and astronomy, with agreed sets of standardised keywords for journal articles,

Controlled vocabularies are not fixed sets of terms; they are periodically and dynamically reviewed to include new terms and to cover the international application of scientific techniques within a discipline and their associated evidence.

Existing archaeological vocabularies are partial, fragmented and used in isolated research communities. And simultaneously, archaeological research grows in size. Far more than 100,000 archaeological articles have been published since 1960, with the total number of research outputs doubling every 7 to 10 years. By 2030 metadata will exist for at least 200,000 published documents and possibly as many as 600,000. Yet this still severely underestimates the real number, as no more than 30% of published academic literature is currently tracked on databases such as Web of Science, Scopus or Lens, with indexing biased towards publications in English and major developed world journals. More importantly still, this does not include metadata on research documents generated by development-led archaeology.

A controlled vocabulary, therefore, might ensure a consistency of descriptions of archaeological research, and could potentially be a necessary first step for the development of a database of document metadata for archaeology that will hold basic information on all archaeological research publications both applied (development-led) and academic.

We welcome papers that address any aspects of the possible development of, or the nature of a controlled vocabulary in archaeology. We would also welcome papers that discuss existing projects to develop vocabularies for archaeology, or that raise issues or problems that might make archaeology unsuitable for the development and introduction of a controlled vocabulary.

1 BUILDING UPON A PREVIOUSLY CREATED VOCABULARY AT THE AUSTRIAN ARCHAEOLOGICAL INSTITUTE

Abstract author(s): Welte, Micheline (Austrian Archaeological Institute)

Abstract format: Oral

In the process of trying to link their in-house database systems together, the Austrian Archaeological Institute (OeAI) has faced many challenges: one of which is the creation of a multi-lingual controlled vocabulary that could be easily managed and updated by the OeAI, and that would work across the OeAI databases. Originally based on vocabulary from the OeAI image database, the cleaning, translation, defining and resorting of terms from a previously-created vocabulary list has been a huge undertaking. From deciding what terms to keep and what to throw away, how to categorize terms, translation issues, and correctly defining terms with expert feedback – the process also became rather lengthy and time-consuming in addition to other pitfalls. With multiple database system types and disparate projects, how do the technical constraints of the OeAI databases affect the vocabulary? How does one expand and refine a previously created vocabulary? How can disputes regarding term definitions be handled? The OeAI will discuss their workflow and current progress in their vocabulary creation, going over what they learned as well as some possible time-saving ideas and tools to help speed up and simplify the process.

2 DEFINE, DESCRIBE, DISSEMINATE. THE EXPERIENCE OF THE NATIONAL GEOPORTAL FOR ARCHEOLOGY FOR THE STANDARDIZATION OF DATA COLLECTION IN ITALY

Abstract author(s): Boi, Valeria - Acconcia, Valeria - Marino, Domenico - Falcone, Annalisa (Istituto Centrale per l'Archeologia) - Gabucci, Ada (freelance archaeologist)

Abstract format: Oral

The National Geoportal for Archaeology (GNA) is a project of the Central Institute for Archaeology (ICA) of Italian Ministry of Culture. It is part of a broader project for the standardisation of scientific documentation produced during archaeological research carried out in Italy. Its structure and data-model have been developed through a long phase of technical and methodological analysis concerning the creation of a hub for the publication of data mainly coming from preventive and more generally development-led archaeology, which normally are not fully published or catalogued, and data coming from research excavations made by Universities and other research bodies.

In designing the platform, great importance was given to the structuring of closed vocabularies for the description of the archaeological record, in all its most important aspects, so as to make it easier to search within the contents of the database and allow for comparison and analysis some data. Starting from the existing national standards, the aspects related to the definition of the chronology and the description of the movable materials, in particular the ceramic finds, have been studied in depth.

3 CONTROLLED VOCABULARIES IN THE BUILT HERITAGE AND GLAM SECTOR

Abstract author(s): Carlisle, Phil (Historic England) - Thomas, David (Royal Commission on the Ancient and Historical Monuments of Wales) - McKeague, Peter (Historic Environment Scotland)

Abstract format: Oral

With the increasing development of national and local Historic Environment Record databases in the late 1980s the need for a consistent terminology to describe the archaeology and architecture of the UK led to the development of various controlled vocabularies. In 1996 this, in turn, led to the establishment of a dedicated Data Standards Unit within the Royal Commission on the Historic Monuments of England (RCHME) to oversee the maintenance and development of a suite of vocabularies for use by the cultural heritage sector. Unlike other resources available at the time, such as the Getty AAT, these were made freely available to anyone who wanted to use them and were provided to software developers for inclusion in heritage databases.

In collaboration with the mda (now the Collections Trust), National Museums of Wales and the British Museum, the Archaeology Terminology Working Party was established in the late 1990s to deliver a thesaurus for describing archaeological objects. Now known as the FISH Terminology Working Group (FISH TWG) and with additional input from RCAHMS and RCAHMW, this collaboration continues, with the remit to develop and maintain controlled vocabularies for use by cultural heritage organizations both in the UK and internationally.

Since 2013, thanks to the SENESCHAL Project (undertaken by the University of South Wales Hypermedia Research Group, Archaeology Data Service and partners) these vocabularies have been available as Linked Open Data via the heritagedata.org website -<https://www.heritagedata.org/blog/vocabulary-providers/> and have been used in projects such as the Portable Antiquities Scheme - <https://finds.org.uk/> and OASIS -<https://oasis.ac.uk/>

The FISH TWG is keen to collaborate with the academic sector to further develop the vocabularies to ensure that they are fit for purpose and remain relevant for the whole sector. This abstract is intended to facilitate a discussion on this subject.

4 THE MULTILINGUAL HERITAGE HEREIN THESAURUS AND ITS ARCHAEOLOGICAL TERMS

Abstract author(s): Ernyey, Katalin (Government Office of the Capital City Budapest, Heritage Department)

Abstract format: Oral

In 1999 Hungary joined to the European Cultural Heritage Information Network. 'HEREIN was established by the Council of Europe at the request of the Member States to take stock of the changes in legislation and practices in the participating countries and provide a forum for pooling and sharing information on cultural heritage.' <https://www.coe.int/en/web/herein-system/about>

The HEREIN Thesaurus originally was conceived in English, French, Spanish. From 2001 it was the Hungarian National Office of Cultural Heritage that coordinated the programme further enlargement, the author of this abstract was national correspondent and thesaurus coordinator till 2010. Today, according to the official home page it exists in 15 languages: Bulgarian, Croatian, Dutch, English, Finnish, French, German, Greek, Hungarian, Norwegian, Polish, Portuguese, Romanian, Slovenian, Spanish.

The Thesaurus was built according to the requirements of the ISO 2788 (Monolingual), ISO 5964 (Plurilingual) standards, taking into consideration the linguistic differences, the particular electronic utilization, indexing the national reports. Its main characteristic is that there is no hierarchy in between the languages. There are 500–600 terms per language divided into 9 groups.

There are c. 30 archaeological expressions in the Thesaurus, related to basic concepts as excavation, archaeological find, archaeological heritage, etc. At the round table the description of the HEREIN Thesaurus in general, the way of building it, its archaeological terms and the debate on 'development-led, preventive, rescue archaeology, excavation' terminology, would be presented.

5 DEVELOPING CONTROLLED VOCABULARIES FOR HERITAGE DATA IN NORTHERN IRELAND

Abstract author(s): Murphy, John - Enlander, Rebecca (Department for Communities - Historic Environment Division)

Abstract format: Oral

Northern Ireland boasts a rich and deep historic resource, which includes buried archaeological remains and up-standing historic monuments and buildings, as well as industrial, defence and maritime heritage and historic gardens and demesnes: this resource is underpinned by a wealth of publicly available archaeological data. For over 80 years the Department for Communities' Historic Environment Division, and its predecessors, have undertaken a series of broad archaeological surveys by county, undertaken large thematic surveys of Northern Ireland's industrial, defence and marine heritage, and collated data derived from research and commercial investigations and excavations. Access to this public resource has, however, been hampered by a lack of standardisation between the individual datasets themselves. Only recently has there been attempts at achieving consistency in recording chronological, typological or administrative data, an issue which has prevented researchers, heritage professionals and the public from getting the most benefit from the data.

The Historic Environment Division has remediated this issue through the application of the CIDOC Conceptual Reference Model to create an object orientated model for Northern Irish heritage datasets, and through the ongoing development of controlled vocabularies for heritage data. This has involved a review of the existing terminologies used in archaeological data held by central government and the application of ontology engineering principles to these datasets to develop controlled vocabularies. Northern Irish specific archaeological terms have been compared to controlled vocabularies in neighboring jurisdictions, particularly the Forum on Information Standards in Heritage (FISH) vocabularies for England, Scotland and Wales, and the vocabularies used by the National Monuments Service in Ireland. Through this development and comparative analysis, the Department is creating a comprehensive hierarchical resource that will enhance the discoverability and interoperability of archaeological data in Northern Ireland.

6 THE GROWTH OF ARCHAEOLOGICAL LITERATURE AND THE PROBLEM OF INFORMATION SEARCH THROUGH TERMS

Abstract author(s): Sinclair, Anthony (University of Liverpool)

Abstract format: Oral

Since 1960 archaeological research publications have grown at an almost exponential rate. The number of research pieces have grown from tens of documents to several thousand published each year, whilst the cumulative total has doubled approximately every 10 years. Science maps of cited journals reveal an ever-widening growth in multi-dis-

ciplinarly and the incorporation of an ever greater range of scientific and digital methods. Maps of terms - keywords and extracted terms - show the extraordinary range of themes that archaeologists cover. Yet this is just a snapshot of academic literature indexed in the major citation databases. There is an enormous number of research documents generated through professional archaeological practice that are largely invisible - the grey literature. This growth highlights the need for archaeologists to focus on the vocabularies of terms used to co-ordinate a controlled vocabulary for describing their research and for searching this literature. A number of vocabularies already exist (FISH, Getty) co-ordinating the terms for describing the physical nature of archaeological materials, but the language of archaeological science and theoretical interpretation is largely missing. A controlled vocabulary potentially offers a mechanism for bringing all archaeological research into accessible reach.

7 AN EXPLORATION OF THE EFFECTS OF ARCHAEOLOGICAL KEYWORDS ON BIBLIOMETRIC STUDIES: THE CASE OF ARCHAEOLOGICAL NETWORK RESEARCH

Abstract author(s): Brughmans, Tom (Centre for Urban Network Evolutions - UrbNet and Classical Archaeology, Aarhus University)

Abstract format: Oral

Bibliometric studies draw on scientific literature and associated information (abstracts, keywords, authorship, institutions, journals, etc.) to explore patterns and changes in the knowledge creation process as formally expressed in publication. The most common approaches concern the analysis of citations and co-authorship. Any bibliometric study's results is highly influenced by the data collection criteria applied, and keywords are a key part in this query-based process.

In this paper we explore the impact of current archaeological publication keywords on structuring bibliometric results. We apply this to the specific archaeological subdiscipline of archaeological network research: publications using network theories and methods, and their associated authors. This is done through a comparison of bibliometric data from two sources reflecting different data collection processes: (1) keyword-based queries through the complemetrix.net platform on the OpenAlex bibliometric database, an open collection of hundreds of millions of scholarly works where the related authors, institutions and keywords are all indexed; (2) a manually collected dataset of relevant publications including non-indexed material, largely based on a snowball sampling starting with known publications and authors (the archaeologicalnetworks Zotero library by Brughmans and Peeples (2017)). Our analysis focuses on comparison of the results of authorship and co-authorship structures. The comparison of results based on keyword-queries in a bibliometric database with those of a highly qualitatively curated selection of relevant literature by members of the community studied, allows for an assessment of the usability, effects and challenges of current archaeology keywords for guiding targeted bibliometric studies.

References:

- Brughmans, T., & Peeples, M. A. (2017). Trends in archaeological network research: a bibliometric analysis. *Journal of Historical Network Research*, 1, 1–24. <https://doi.org/10.5072/jhnr.v1i1.10>
- Complemetrix.net <https://complemetrix.net/interface.html>
- Archaeologicalnetworks <https://www.zotero.org/groups/824994/archaeologicalnetworks>

8 MOVING BEYOND HERITAGE DATA VOCABULARIES - LINKING RESEARCH FRAMEWORKS WITH BROADER SOCIO-CULTURAL RESEARCH TOPICS

Abstract author(s): Miles, Daniel (HE - Historic England)

Abstract format: Oral

Research Frameworks have traditionally been produced as publications (printed or PDF) which set out research questions and strategies that help coordinate research and fill gaps in our understanding of the past. The static document format means that it has been difficult to link across the different thematic and geographical frameworks, and to quantify what contributions have been made to specific research questions.

Recently a new model has been developed, and English and Scottish Research frameworks are now being published online and in one place on the Research Frameworks Network (<https://researchframeworks.org/>). The questions and strategies are managed in a database and each question is tagged with terms that relate to the subject matter of the question. By tagging with controlled vocabularies, users can search across the different research frameworks. The frameworks can also be connected to other online resources, such as the OASIS online investigation reporting system, creating direct links between the reporting of archaeological research results and the questions used to frame these investigations.

Controlled heritage related vocabularies, published by the Forum on Information Standards in Heritage (FISH), are used to tag the questions which are related to specific monuments, objects or scientific techniques, etc.... However, many research questions are not directly associated with archaeological terms but cover broader socio-cultural-eco-

conomic aspects of past societies, such as migration, poverty, disease etc..., and we need to be able to use different vocabularies to describe these research topics. By having agreed research topic terms, users will be able to search across broader research themes and it will enable the Research Frameworks Network to expand out and link up with different research areas and subjects and engage new research communities.

9 REFLECTIONS ON EXPERIENCE WITH ARCHAEOLOGICAL CONTROLLED VOCABULARIES IN INDEXING AND RETRIEVAL

Abstract author(s): Tudhope, Douglas - Binding, Ceri (University of South Wales)

Abstract format: Oral

In the STAR project investigating semantic integration, we employed thesauri from the Forum on Information Standards in Heritage (FISH) and word lists from Historic England recording manuals. Semantic integration allowed search across both archaeological datasets and grey literature reports via data extraction and NLP (Tudhope et al. 2011; Vlachidis & Tudhope 2016). The ARIADNE and ARIADNEplus European Infrastructure projects confronted multi-lingual issues in seeking to integrate archaeological data and reports written (and indexed by CV) in various partner languages. We developed tools to help map partner CVs to a central 'mapping hub', the Getty Art and Architecture Thesaurus (AAT), allowing search across partner data and reports in different languages and also query expansion using the AAT's hierarchical structure (Binding & Tudhope 2016). We have also provided tools to express English, Scottish, Welsh (including Gaelic and Welsh language) FISH vocabularies as Linked Open Data (HeritageData) facilitating programmatic use. We are currently collaborating with the Archaeology Data Service (ADS) on CV based NLP tools to make automatic indexing suggestions for the OASIS online index of fieldwork events and their unpublished reports, drawing on FISH vocabularies (Monuments, Objects, Periods) employed in OASIS subject indexing.

Reflections from this experience are discussed. These include the potential of mapping between CVs, possible need for an enhanced entry vocabulary (synonyms etc) in CVs when used in NLP and the challenge of compound phrases that combine concepts, possibly meriting a faceted approach. There may be a need to draw on standard CVs from other domains (eg for scientific areas). It is possible to index with multiple CVs. It is important to consider use cases; the indexing requirements of grey literature may differ from academic journal publishing. CVs should be continually maintained and evolve, alert to potential gaps or bias of different kinds.

10 THE FUTURE OF BIOARCHAEOLOGY: CONTROLLED VOCABULARIES, ONTOLOGIES AND ETHICALLY MINDED DATA GOVERNANCE FOR HUMAN REMAINS IN THE ARTIFICIAL INTELLIGENCE AGE

Abstract author(s): Ulguim, Priscilla (Vrije Universiteit Brussel; BB-LAB)

Abstract format: Oral

Bioarchaeology and Archaeoethnology address fundamental questions regarding the human past through the most direct evidence of past people: their remains. Data are vital in the interpretation of individual life histories, population dynamics, as well as variabilities in space temporal funerary practices and broader questions of cosmology, society, identity and technology. Yet, despite advances in both archaeological and life sciences data management, bioarchaeology suffers from a myriad of ill-defined terminologies, taxonomies and a low maturity data infrastructure. Furthermore, bioarchaeological data presents significant complexities. Bioarchaeologists require standardised biological descriptors alongside taphonomic information. Funerary contexts are often poorly defined. Meanwhile, researchers work with sensitive data and must account for CARE as well as FAIR principles while ensuring that data governance adheres to ethical guidelines. I argue that the broken links in bioarchaeological data imply broader issues concerning sustainable, replicable and reproducible data analysis as well as stewardship, curation and long-term preservation with significant impacts on ethical data usage and the representation of historically marginalised groups.

To address these gaps, I propose a novel methodology, toolkit and digital roadmap to better describe, reflect, reconcile and visualise bioarchaeological data while accounting for FAIR and CARE principles. The model encompasses a controlled vocabulary for digital bioarchaeology and ontological model, extending from best practices including CI-DOC-CRM, SKOS and Dublin Core. Importantly, all vocabularies and ontologies are, by definition, living documents. Therefore, I propose a roadmap for git-based version control and code sharing together with AI-driven approaches to extract relevant data from archaeological literature and support reuse. The workflow includes a collaborative framework to engage multiple academic and public stakeholders for the implementation of ethically minded data governance. In conclusion, I advocate for a sustainable and ethical approach to bioarchaeological data governance, emphasising that there is no separation between humans, remains and data, only "human remains data".

11 A CONTROLLED VOCABULARY AND SPECIALIST BIBLIOMETRIC DATABASE: A MECHANISM FOR LEVERAGING THE RESEARCH VALUE AND SUSTAINABILITY OF ARCHAEOLOGICAL RESEARCH

Abstract author(s): Aitchison, Kenneth (University of Liverpool; Landward Research Ltd)

Abstract format: Oral

Two linked projects are in development that could significantly impact upon the effectiveness of the research infrastructure of archaeology both academic and professional. The first project relates to the development of a controlled vocabulary ('thesaurus') that will shape the way in which the nature and outcomes of archaeological research in all its forms can be described through keywords and index terms. The second project relates to the creation of a specialist bibliometric database that will record the metadata for all documentary outputs that result from archaeological research providing a common online search mechanism for all these documents - facilitated to a significant degree by the controlled vocabulary developed in the first project.

The proposed projects will necessarily be international and multi-lingual in nature, and multi-partner / multi-team-based to ensure effective updates across academic and professional research, as well as coverage of the many forms of archaeological research.

For both parts of the research programme (vocabulary and database) we propose an initial pilot project to be followed by a larger rollout of the project in order to demonstrate proof of concept prior to seeking later funding, and to provide a contained 'venue' in which to resolve initial issues. The extent of the larger rollout will certainly include Europe, and - depending on making contacts during the pilot project possibly beyond.

12 THE ONTOLOGY OF ARCHAEOLOGICAL OBJECT NAMES IN FINLAND: A CONTROLLED VOCABULARY FOR CATALOGUING ARCHAEOLOGICAL OBJECT FINDS

Abstract author(s): Rohiola, Ville - Kuitunen, Jutta (Finnish Heritage Agency)

Abstract format: Oral

Controlled vocabularies form an essential basis for archaeological collection management. In 2019, the Finnish Heritage Agency initiated an ontology work of archaeological object names. The work was done in cooperation with the Finnish Terminology Centre TSK and expert group of archaeologists. The aim was to develop a controlled vocabulary that standardizes the catalogued metadata of archaeological object finds and enhances digital management of archaeological collections. The ontology of archaeological object names is machine-readable, hierarchical group of concepts and the concepts are formed with individual identifiers. The goal of the ontology is that information of archaeological objects, such as object name, dating, material, and spatial information, is reported and digitally catalogued using the ontological concepts.

The aim of the study is to demonstrate the potential of controlled vocabularies considering the archaeological object finds. In this study, we present that ontologized object metadata provides a possibility (i) to enhance the study of archaeological objects, (ii) to use semantic technology and Linked Open Data that makes the data more accessible, (iii) to do semantic elaboration and linking with other metadata using standardized vocabularies, and (iv) to make data integration with collaborative data portals/platforms. The study also presents a case study of developing a cataloguing tool for archaeological objects that uses controlled vocabularies. As a conclusion, the study presents how controlled vocabulary is a necessary requirement to form the basis for the digital collection management of archaeological objects.

13 CONTROLLED ARCHAEOLOGICAL VOCABULARIES IN UK DEVELOPMENT INFRASTRUCTURE PROJECTS OVER 30 YEARS. LOOK AHEAD TO A NEW DATA EXCHANGE FORMAT

Abstract author(s): Carver, Jay (4AD Consultants Ltd)

Abstract format: Oral

In 1996 Dr. Robin Boast of Cambridge University Museum of Archaeology & Anthropology was commissioned by Rail Link Engineering (RLE), project managers delivering the Channel Tunnel Rail Link project (UK), to produce a dataset structure and controlled terms dictionary for the digital recording of archaeological investigation on the project. The datasets were envisaged to provide "maximum flexibility of access to independent sets of archives for the widest possible audience", and most importantly, be independent of software, hardware or operating systems. They would also be fully interactable with the then emerging geographic information systems (GIS) being deployed to analyse archaeological data.

The RLE initiative was in part influenced by similar goals in the geotechnical industry to develop a method for the transfer of digital records between industry organisations. In 1991 the Association of Geotechnical and Geoenvironmental Specialists published the first AGS data format, which today is in its 4th Generation (AGS 2022). Also

emerging at that time was the Draft International Core Data Standard for Archaeological Sites and Monuments (CI-DOC 1995), which was followed in 1998 by the first edition of MIDAS – A Manual and Data Standard for Monument Inventories (RCHME) which included the wide ranging FISH thesauri (currently at Version 25 <https://heritagedata.org/live/schemes.php>). Recently the High Speed 2 rail project in the UK has utilised FISH as the common data dictionary for production of electronic records, together with some project specific custom dictionaries.

How have these standards have been applied in practise? We propose that to contribute to the development of a sustainable research output that allows effective synthesis of research data, a new data exchange format needs to address not only common terminologies but also a data structure standard for spatial and assemblage datasets that is easily exchanged between organisations, following the lead set by the AGS.

14 LURKING ON THE EDGE OF PRACTICE: VOCABULARY INSTINCTS FROM BETWEEN ARCHAEOLOGICAL RESEARCH, MUSEUM DOCUMENTATION AND DEVELOPMENT-LED ARCHAEOLOGY

Abstract author(s): Maurer, Jakob (University for Continuing Education Krems, Center for Museum Collections Management) - Pieler, Franz (State Collections of Lower Austria)

Abstract format: Oral

Working in an institution that conducts archaeological research, documents archaeological collections and deals with huge finds-corpora stemming from development-led archaeology, “controlled vocabularies” (or their lack) are an issue that you stumble upon quite frequently. The subject, however, is multi-layered; the desires/needs you have sometimes contradict each other. And in some cases, the subject is only a side issue (if there was a sustainable vocabulary and an easy way to implement it, you could use it, as there is not, you can’t).

The contribution aims to present an overview of individual observations and thoughts related to this topic, and on selected initiatives towards archaeological vocabularies (with a focus on the situation in Austria). The aspects brought forward stem not only from daily work & personal experience (e.g. within the research project “United by Crisis?” on the Early Neolithic site of Schletz), but also from stakeholder consultations done within the feasibility study “Dig-Finds” on archaeological demands concerning “digitalization” methods. The contents of the lecture should be useful as a basis for a broader discussion. However, due to e.g. different requirements and issues of legacy, granularity & institutional jurisdiction, they do not suggest an easy way towards a broad implementation of a single controlled vocabulary.

15 WHAT’S IN A NAME? CONTROLLED VOCABULARIES FOR EUROPEAN RESEARCH IN THE ARIADNE RESEARCH INFRASTRUCTURE

Abstract author(s): Richards, Julian (University of York)

Abstract format: Oral

The ARIADNE Research Infrastructure provides a single point of access to four million archaeological resources drawn from four continents, over 40 countries, and ranging in date from the archaeology of the earliest humans to the Cold War. The resources encompass national sites and monuments records, fieldwork reports and archives, and individual artefacts and they include scientific analyses, dating evidence, 3D models and GIS.

The online resources are available Open Access, and they are drawn from the national datasets of over 30 organisations. In their native format, each follows different database schema, different vocabularies, different period terms, and they are in different languages. However, after a decade of development we have achieved a high degree of data interoperability by the informed application of mapping the various schema to the shared ARIADNE ontology (itself a subset of the CIDOC CRM ISO standard). We have mapped native subject vocabularies to a common spine, using the Getty Art and Architecture thesaurus, which facilitates multilingual and hierarchical search and browse. We have applied the PeriodO online application to provide a timeline search using absolute years, or a cross search using cultural period terms. The data and vocabularies are held as Linked Open Data and can now be used in multiple applications, such as the UK’s “Unpath’d Waters” maritime heritage project (<https://unpathd.ads.ac.uk/>), as well as accessed via the ARIADNE portal (<https://portal.ariadne-infrastructure.eu/>).

This paper will discuss some of the challenges to providing international data interoperability on a large scale in the heritage sector, the importance of controlled vocabularies in achieving this, and it will introduce some of the new research questions that have been opened up via our infrastructure.

CALABRIA BEYOND THE CLASSICAL PERIOD: THE LONGUE DURÉE OF A MEDITERRANEAN REGION

Session theme: 6. Contested Pasts & Presents

Session organisers: Attema, Peter (Groningen Institute of Archaeology) - Citter, Carlo (University of Siena) - Mazza, Michele (Soprintendenza Archeologia Belle Arti e Paesaggio per la città metropolitana di Reggio Calabria e la provincia di Vibo Valentia)

Session format: Regular session

Over the last decades Calabria has become the core of several research projects ranging from prehistory to the present challenging the dominance of the study of the classical periods and of classical archaeology. This new focus on Calabria's long term cultural heritage, especially evident in regional archaeological projects, is paralleled by a growing interest in public engagement and dissemination of the outcomes of such research. The results of recent landscape archaeological and anthropological

fieldwork carried out by research groups and national heritage services suggests that continuity and gradual change rather than events shaped the long term history of Calabria.

This session aims to collect papers from academics, national heritage service officers, local units, museums and archaeological parks to debate the historical outcomes of research beyond the classical period and the methods to contribute to the *longue durée* of Calabria. As such the case study of Calabria may have relevance for comparable regions in the Mediterranean whose cultural hallmark has been foremost their classical past.

ABSTRACTS

1 PREHISTORIC HUMAN ENGAGEMENT WITH THE UNDERGROUND REALM: THE CASE OF THE GROTTA DI SANT'ANGELO OF CASSANO ALLO IONIO (CALABRIA, ITALY)

Abstract author(s): Carloni, Delia (Groningen Institute of Archaeology, University of Groningen; Centro di Ricerca speleo-archeologica 'Enzo dei Medici') - Larocca, Felice (Gruppo di ricerca speleo-archeologica, Università degli Studi di Bari Aldo Moro; Centro di Ricerca speleo-archeologica 'Enzo dei Medici') - Attema, Peter (Groningen Institute of Archaeology, University of Groningen) - De Benedetto, Giuseppe (Dipartimento di Beni Culturali, Università del Salento)

Abstract format: Oral

Since the 1990s, Calabria has gradually become an important testing ground for speleo-archaeological research, repeatedly attracting scholars from all over Italy and abroad willing to take part in scientific missions in underground environments. These fieldworks had the virtue to combine speleological exploration of caves with multidisciplinary archaeological investigation, in some cases paying special attention to the relationship between underground topography and accurate location of prehistoric findings. Noteworthy, specialized research was attentive to raise the awareness of local archaeological resources among the general public made of non-professionals – local residents in particular – especially with regard to prehistoric times.

This paper presents preliminary results from a new research project focusing on the archaeological deposit of the Grotta di Sant'Angelo, located in the territory of the municipality of Cassano allo Ionio (Calabria, Italy). The site is part of a larger underground system developed in the Monte San Marco massif. Evidence of prehistoric human presence was found in many areas of the underground chambers and galleries, developed over different levels, and suggests a multi-purpose and multi-period use of the hypogean spaces. In particular, the area known as "Trivio", a sort of junction between different galleries, seems to be of special interest. The cave floor is disseminated with a series of fractures of various depths hosting abundant archaeological material: pottery dating to the Copper Age (4th-3rd millennium BC), stone tools, faunal remains, and some human remains. Ceramic containers, suspected to have hosted ritual offerings, will be the object of an in-depth taphonomic, chronological, and functional study. This, along with the contextualization of data in the light of hypogean topography, will contribute to the understanding of how prehistoric people engaged with caves and of the social and symbolic aspects of their way of living.

2 BEFORE MEDMA: THE AREA OF ROSARNO (RC) IN THE PREHISTORIC AND PROTOHISTORIC TIMES

Abstract author(s): Scaravilli, Marco Stefano (Soprintendenza Archeologia Belle Arti e Paesaggio RC. VV.) - Quondam, Francesco (University of Vienna)

Abstract format: Oral

Paolo Orsi's discoveries in Rosarno (RC), at the beginning of the 20th century, put an end to the vexed question of the localization of Medma, the main Locrian colony on the Tyrrhenian coast, mentioned by literary sources and started a long season of research on the site, which continues to this day. This phase of study, although characterized by a certain discontinuity, has made it possible to acquire numerous elements of knowledge on the organization of the ancient town. Above all thanks to a renewed protection activity, started in the late 70's, and to the planning of a more organic research program, in the 2000's, it was possible to partially reconstruct the urban topography of the Greek settlement and the arrangement of its sacred areas. Nevertheless, since the researches focused mainly on the Greek phase, the settlement dynamics of the pre-Greek age remain largely unknown. In recent years, the reports of accidental discoveries and the monitoring activity of the agricultural and building works, carried out by the Soprintendenza Abap RC-VV, allowed to acquire significant, albeit fragmentary, data which highlight a population of the low hills near Rosarno and the lower valley of the river Mesima, dating already in prehistoric and protohistoric times. The aim of this paper is to collect and review the available data to outline a preliminary framework of the human settlement related to these phases.

3 THE CULTURAL LANDSCAPE OF THE CROTONIATIDE: DEVELOPMENT AND ORGANISATION FROM A LONGUE DURÉE PERSPECTIVE

Abstract author(s): Stümpel, Anna-Elisa (University of Melbourne; University of Groningen) - Attema, Peter (University of Groningen)

Abstract format: Oral

In recent years, the region of Calabria, located in South Italy, has increasingly become a focus of (landscape) archaeological research, with special attention to its role in the Greek colonisation of South Italy and the formation of 'Magna Graecia'. Archaeological surveys and excavations continually shed new light on the longue durée history of Calabria. The archaeology of some areas, such as the Sibaritide, have been researched and published extensively, while other areas, though likewise offering rich data, have seen less synthesis of scattered and not always easily accessible publications. An example of this circumstance is the Crotoniatide, situated in the northern part of Calabria on the Ionian Sea. While the first evidence of human frequentation dates back to the Palaeolithic and settlement is well-documented for the Neolithic periods, the majority of research has been dedicated to the Greek occupation of the Crotoniatide during Antiquity, which began with the foundation of the apoikia of Kroton at the end of the 8th century BC.

In this contribution, we present the development and organisation of the (cultural) landscape of the Crotoniatide taking a longue durée perspective, starting with the protohistorical landscape and following its development into the Hellenistic Period. To study the indigenous organisation of (cultural) landscape organisation and the impact the arrival of the Greek settlers had on this over time, we compiled a database of published data of surveys and excavations. The collected evidence is discussed in light of theories regarding the Greek diaspora and ancient Greek ideas of landscape perception in terms of spatial concepts as chora and eschatia and current ideas on the (political and ritual) demarcation between the 'colonial' coast and 'indigenous' hinterland.

4 IDENTIFICATION AND STUDY OF ARCHAEOLOGICAL SITES IN ASPROMONTE NATIONAL PARK

Abstract author(s): Consoli, Riccardo (Università degli Studi Mediterranea di Reggio Calabria) - Castrizio, Daniele - Manariti, Alessandro - Arcudi, Antonio (Università degli studi di Messina) - Gambino, Antonio (Università degli Studi Mediterranea di Reggio Calabria) - Gennaro, Andrea (Superintendent of Archeology, Landscape, and Fine Arts for the metropolitan city of Reggio Calabria and the district of Vibo Valentia) - Licari, Lino (Superintendent of Archeology, Landscape, and Fine Arts for the metropolitan city of Reggio Calabria and the district of Vibo Valentia) - Puccio, Antonio (Università degli Studi Mediterranea di Reggio Calabria)

Abstract format: Oral

Aspromonte is a mountainous massif that dominates the district of Reggio Calabria, grafting itself in its centre, and gradually descending towards the sea, so much so that its territory extends from the coast to approximately 2000 metres. Such characteristics

place it inevitably within the historical events of the area. Moreover, in the local studies tradition about Aspromonte, traces of an early attempt to recognise a land that was lived in and anthropised can be found. This is in contrast to the collective imagination that saw it as wild and detached from everything else, especially the coast. In reality, archive documents, historical sources, and in situ archaeological realities show that the idea of the mountain as an inaccessi-

ble, untamable and dangerous place is an invention of the last fifty years. During this time, there has been a progressive disinterest and abandonment of various realities (economic, cultural, military, etc.), which on several occasions, and with different cultural models, occupied the foothills of this unique and ancient mountain.

Recent disclosures have also offered a broad chronological overview, allowing room for future in-depth research. In particular, ten days of non-systematic survey were undertaken in specific areas. The results of this research, which involved a team of 8 people with different professional skills and covered a rather large overall area, but limited to the abovementioned points, will be presented during the meeting session.

5 THE BRIATICO PROJECT: RESEARCH ON A MEDIEVAL CITY AND ITS LANDSCAPE THROUGH A DIACHRONIC PERSPECTIVE

Abstract author(s): Mazza, Michele (Ministry of Culture) - Citter, Carlo (University of Siena)

Abstract format: Oral

The aims of this contribute is to explain the results of a research conducted in the site of the ancient town of Briatico Vecchio. The original settlement of Briatico developed as a medieval fortified centre on a rocky outcrop naturally defensible by overhanging walls. It used to be bordered to the north-west by the Fiumara Murria and to the east by one of its tributaries. A settlement of considerable size, with a large portion of buildings still visible, despite the 1783 devastating earthquake. In particular, we mention the castle and simple houses, with traces of human presence since the Middle Bronze Age. The research saw the collaboration between the University of Siena, the University of Calabria, the University of Basilicata, the municipality of Briatico and the Superintendency of Archaeology, Fine Arts and Landscape for the Metropolitan City of Reggio Calabria and the Province of Vibo Valentia engaged in an in-depth study of the Briatico Vecchio site and the surrounding area. The investigations began in 2021, and continued in 2022, deepening the research in relation to the data collected during the field seasons. In this period, the three research groups focused on different aspects of the landscape thus having a more complex vision of the dynamics active in the territory over time. The activities will continue during 2023 with an insight of the study area.

6 THE MEDIEVAL ARCHAEOLOGICAL MAP OF THE REGGIO CALABRIA'S DISTRICT. TOOL FOR PROTECTION, RESEARCH AND ENHANCEMENT

Abstract author(s): Bini, Sara (Ministry of Culture)

Abstract format: Oral

This paper was created with the aim of summarizing the project concluded during the PhD years and which had as its objective the collection, within a georeferenced system, of the archaeological sites identified within the administrative boundaries of the province of Reggio Calabria. In particular, the research has focused on deepening the data concerning the post-classical age, i.e. starting around the fifth century AD. until the earthquake of 1783.

The collection has led to the identification in particular of more or less preserved architectural complexes (churches, monasteries, castles, towers) and a few archaeological data, mainly due to the lack, in the history of Calabrian studies, of investigations aimed at the knowledge of the medieval age, a lack that is being filled only in recent years thanks to preventive archeology investigations and limited investigations for research and non-emergency purposes.

The final product therefore led to the creation of a tool that can be implemented with more and more new data useful for the protection, research and enhancement of the post-classical archaeological heritage of the province of Reggio Calabria, providing a collection of historical, archaeological, archives and bibliographies that will be useful to start or carry on, hopefully, more and more investigations aimed at the knowledge of the numerous contexts that have arisen along the coast and in the internal territory from the fall of the Roman Empire up to the seismic events before 1783 but not less than 1908 which caused a drastic change in the anthropic landscape both on the coasts and on the slopes of the Aspromonte.

7 ANCIENT MILETO (CALABRIA, PROV. VIBO VALENTIA): NEW CONTRIBUTIONS TO THE KNOWLEDGE OF THE SETTLEMENT IN THE MODERN AGE

Abstract author(s): La Serra, Cristiana (Freelance) - Lico, Fabio (Freelance)

Abstract format: Oral

The archaeological site of the Ancient Mileto (Italy, Calabria, Vibo Valentia) has had a long settlement history, since the Byzantine age, when a fortified center was formed, until the earthquake of 1783 -or few decades after- when a systematic plundering activity affected the entire ancient centre.

Between 2021 and 2022, two excavations were carried out under the scientific direction of SABAP for the metropolitan city of Reggio Calabria and the province of Vibo Valentia: one of the service areas of the SS Trinità abbey complex was investigated and an area unexplored part of the Norman village.

The interventions, born from the need to improve the visits to the Archaeological Park, offered the opportunity to stratigraphically investigate the last phases of the life of the settlement, definitively obliterated by the plundering works carried out until the mid-1800s. The contribution, through the presentation of excavation data and recovered archaeological materials, intends to constitute a starting point for the economic, social and urban planning knowledge of the city during the modern age, also in relation to the relevant medieval pre-existences and the practice of reuse. For the first time, material data relating to the most recent phases of life are presented, until now known almost exclusively through written documentation.

8 THE FORTRESS OF ARENA: HISTORY OF CASTLE THROUGH EXCAVATION DATA AND LANDSCAPE ANALYSIS

Abstract author(s): Felicioni, Camilla - Patacchini, Andrea (MA University of Siena) - Martini, Marco - Ricchiuti, Daniele (MA Sapienza - University of Rome) - Lico, Fabio (MA University of Calabria) - Molaioni, Elena (MA Sapienza - University of Rome)

Abstract format: Oral

The Norman castle of Arena, located in a village in southern Italy (Calabria), has been populated since the high middle ages up to the 1783 devastating earthquake, showing a continuity of attendance in the long term cultural heritage.

This paper aims to relate the castle with the surrounding area in order to understand its importance and role. So far, literature on the region for the second millennium CE is scarce. Despite this odd, we will provide a short overview of the archaeological data concerning the castle. We are undergoing a survey in the whole county with attention to the former “Feudo of Arena”, a larger juridical district focused on the castle. Finally, everything will be loaded on the QGIS software.

The reconstruction of the history of the castle is strictly bound to the local culture and heritage, which is the reason why we started a public engagement project to improve the relation with local community.

9 EXPLORING THE PAST OF THE DESERTED VILLAGE OF SAN LEO VECCHIO. A PRELIMINARY RESEARCH

Abstract author(s): Coleschi, Alessandra (Università di Siena) - Paciotti, Ylenia (Università di Genova)

Abstract format: Oral

San Leo Vecchio, in the municipality of Briatico, is one of the key sites detected within the “Briatico Project” by the University of Siena. Its importance lays mainly in its position close to the ancient town of Briatico Vecchio, that was abandoned after the 1783 earthquake. They used to be connected by a straight route, which is an exception in the neighbouring area. Furthermore, the position of San Leo is suitable for exploitation of the countryside.

This contribution aims to analyze the changes of the site over time. We will study the historical maps, the aerial and satellite photographs, the LiDAR and the survey data. The site was abandoned after the 1908 earthquake. This helped to freeze the buildings and the structures of the village long before the major changes occurred in Italian countryside in the last fifty years. The comparison between this area and the near coast makes this difference crystal clear.

10 ROCK MILLSTONES AND LANDSCAPE EVOLUTION BETWEEN LATE ANTIQUITY AND EARLY MIDDLE AGES IN THE IONIAN COAST OF REGGIO CALABRIA (ITALY)

Abstract author(s): Cottica, Daniela (University Ca' Foscari Venice) - Bini, Sara (Soprintendenza Archeologia, belle arti e paesaggio per il Comune di Venezia e Laguna)

Abstract format: Oral

The so-called „rock millstones“ are an interesting and peculiar feature of several municipal territories along the Ionian coast of Reggio (Calabria, Italy): they are structures dug into the outcropping rock and were intended for winemaking. Their origin sometimes could date back at least to the early imperial era, however, it is believed that they may have developed more consistently in the transitional period comprised between Late Antiquity and the Early Middle Ages. Indeed, in that period of time, various regions had to increase the production of their local excellences. As far as Calabria is concerned, one of the local excellent products was undoubtedly wine, as confirmed by Cassiodoro and testified by the presence of Keay LII amphorae (manufactured in Calabria) at several emporia around the Mediterranean. Moreover, the rock millstones can be placed in relation with other known archaeological features such as kilns, villas and, later, monasteries: altogether the available evidence adds significant details to the evolution of the regional socio-economic landscape between Late Antiquity and the Early Middle Ages. This latter theme is of high relevance also for long term protection of the local archaeological heritage. Furthermore, since wine production is still one of the regional excellences of modern Calabria, research on the origin of winemaking can be linked to development of vine-growing and ampelographic heritage of this region. Therefore, analysis of archaeobotanical data will be part of

the project “Viticulture and wine production in ancient Calabria. The production structures: the rock millstones of the southern Ionian coast of Calabria”, a new interdisciplinary project, in collaboration with Ca’ Foscari University of Venice, the Superintendency of Reggio Calabria and Vibo Valentia. Our presentation will illustrate this project, within the general framework of winemaking and vine-growing ancient and modern Calabria.

A. THE CHORA OF S. LEONZIO (CAMINI-RIACE-STILO, RC). HISTORICAL EVOLUTION OF A RURAL LANDSCAPE ACCORDING TO A LONG-TERM PERSPECTIVE

Abstract author(s): Hyeraci, Giuseppe (Istituto di Studi su Cassiodoro e sul Medioevo in Calabria)

Abstract format: Poster

The definition of the limits of the Tenimento of S. Leonzio (Carthusian grange of S. Stefano del Bosco), included in the ancient district of the city of Stilo - as described by the Grande Platea of 1532 - , and its stability until the late 18th century, allow for the identification of a sample territory which lends itself well to a long-term historical micro-geography analysis. From the formation and subsequent structuring of the territory pertaining to a peripheral cell formerly of the Byzantine Metropolis of Reggio and then dependence of the land lordship of S. Stefano del Bosco in the Norman age, the contribution intends not only to analyze its internal structure and the social and economic connections, but regressively it will try to highlight the presuppositions of this rooting, including the entire structure inherited from the Roman age, so as to interrogate problems relating to the central centuries of the early Middle Ages not otherwise classifiable; finally it will focus on some salient themes, from the evolution of the settlement network, to land geography, to the agricultural landscape, taking advantage of the information potential of the „territorial GIS“.

324 INTERCONNECTIONS BETWEEN METAL AND NON-METAL ASSEMBLAGES AND METAL AND NON-METAL OBJECTS IN HOARDS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Maciejewski, Marcin (Institute of Archaeology, Maria Curie-Skłodowska University in Lublin) - Tarbay, János Gábor (Department of Archaeology, Scientific Directorate, National Institute of Archaeology, Hungarian National Museum) - Nowak, Kamil (Institute of Archaeology, Nicolaus Copernicus University in Toruń)

Session format: Regular session

In continental Bronze Age archaeology, the widely accepted definition of a hoard, according to W.A. von Brunn, is that it must contain at least two metal objects. R. Bradley presents a completely different perspective. He speaks of deposits, not hoards, and significantly expands the catalogue of behaviours to be part of a trans-European and longue durée process.

For decades, hoards research has focused exclusively on metal objects. On the one hand, this was the choice of scholars; on the other hand, many finds were discovered haphazardly and taken out of context, destroying or leaving behind less spectacular and durable items such as potshards, organic elements, stone objects, etc.

However, these items were also part of metal hoards. We also know of similar assemblages consisting of artefacts from other raw materials, as well as food deposits, human sacrifices and other relics of similar practises. All these acts are known from many periods, at least from the Mesolithic to the Modern Time.

We would like to discuss some questions together:

- To what extent were the deposition practices of various goods (metal, stone, pottery, food, human and animal remains, etc.) similar?
- Can we speak of a single phenomenon or behaviours that seem - from the perspective of 21st-century archaeology - similar?
- What do the non-metallic elements discovered in these assemblages tell us about the metal hoards?
- What interactions occurred between deposits containing and without metal artefacts by the same societies?

Deliberately selected artefacts and ecofacts deposited over an extended period (e.g. structured deposition) should be interpreted differently from a single act of deposition (like hoards)?

Societies with and without monetary systems perceive the value of goods differently, so we would like to focus on just one of these groups. We invite all scholars of the Stone, Bronze and Iron Ages to take part.

1 MESSAGE IN A BOTTLE - METAL AND NON-METAL ARTEFACTS FROM THE MIDDLE BRONZE AGE HOARD OF JÁSZDÓZSA (EASTERN HUNGARY)

Abstract author(s): Kiss, Viktória (Institute of Archaeology Research Centre for the Humanities) - Csányi, Marietta - Tárnoki, Judit (Damjanich János Museum) - Jaeger, Mateusz (Adam Mickiewicz University, Institute of European Culture)

Abstract format: Oral

Systematic excavations at the Jászdózsa-Kápolnahalom Bronze Age tell-settlement were conducted between 1966 and 1975, led by Ilona Stanczik and István Bóna. Three main periods were distinguished within the 5.40 m thick occupation layer with 16 levels: 3 m thick layers of the Hatvan culture (from 16 to 11 levels), the Füzesabony period (levels from 10 to 6) and the upper 5 levels of the Koszider period. During the first season in 1966, in level 11, the upmost level of the Hatvan culture a hoard was discovered dug into the floor of House 1 (dated between ca. 2000-1800 BC). Among the finds 37 gold hair rings, 30 small gold studs, one gold disc (gold finds altogether weighing more than 150 g), a bronze axe, a flanged axe, an amber necklace (consisting of 168 beads), four star-shaped faience beads, as well as animal teeth and crawls were found, hidden in a vessel. Thanks to new analyses of hoards from the region (e.g. from Spišský Štrvok) a more detailed picture can be drawn about Middle Bronze Age settlement depositions in the area of the Carpathian Basin. One of the main question of the interpretation of these hoards is the ritual or profane purpose of their hiding. The hoard from Jászdózsa, yielding claws of a crow and of a buzzard, beside the dog's tooth drilled as an amulet and other jewellery, suggest a ritual interpretation. In our paper recent investigations of the gold and amber finds of the hoard will also be presented.

2 METAL - POTTERY - BONES - FLINT - STONE. A COMPLICATED BIOGRAPHY OF A SINGLE SPOT

Abstract author(s): Maciejewski, Marcin (Institute of Archaeology Maria Curie-Skłodowska University) - Hałuszko, Agata (Institute of Archaeology, Maria Curie-Skłodowska University; Archeolodzy.org Foundation) - Wilczyński, Jarosław (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences) - Mączyński, Piotr (Institute of Archaeology, Maria Curie-Skłodowska University) - Chachlikowski, Piotr (Faculty of Archeology, Adam Mickiewicz University) - Bartmiński, Piotr - Siłuch, Marcin (Institute of Earth and Environmental Sciences, Maria Curie-Skłodowska University) - Przybyła, Marcin („Dolmen“ s.c. Marcin Przybyła Michał Podsiadło)

Abstract format: Oral

A hoard of metal items dated to the late Bronze Age was accidentally found in Kaliszany (north Greater Poland) in 1943. Its first descriptions and a brief note on the find circumstances originate in the 1950s and 1960s. According to the note, the metal items came to light „during the levelling of the hill”. The term „hill” unambiguously suggests a natural landform. At the same time, the archival documentation kept in the Archaeological Museum in Poznań shows that it might have as well been anthropogenic. It is particularly intriguing in Greater Poland's post-glacial, agriculturally transformed landscape. The find context, however, did not receive much scholarly attention. One of the potential interpretations was that the hoard had been deposited in the mantle of an earlier barrow.

Investigations at the selected spot in Kaliszany were triggered by the discovery in Rosko, located ca. 100 km to the west. There, the late Bronze Age hoard rested in a stone-and-earth structure which had most likely been raised specifically for the deposition. We wondered whether the hoard from Kaliszany could have a similar structure. Our non-destructive surveys, excavations and archival documentation indicate a tangled site biography. It was not merely the act of depositing a bunch of metal items in the hill or barrow slope that it witnessed.

Besides metal artefacts, the spot yielded a complex stone structure, deposits of pottery vessels, flint artefacts, and human and animal bones.

The obtained results show how sophisticated the scenarios for metal item deposition were. They also articulate the un-obvious relationship between the various find categories which we so willingly separate in our archaeological practice. Paper is financially supported by the National Science Centre, Poland (project no. UMO-2021/41/B/HS3/00038).

3 CONNECTING ORGANIC AND INORGANIC MATERIALS IN THE VIKING-AGE GALLOWAY HOARD

Abstract author(s): Goldberg, Martin (National Museums Scotland)

Abstract format: Oral

Research into hoards has often focused on metal objects and while the Galloway Hoard contains over 5kg of silver, and more gold objects than any extant hoard surviving from Viking-Age Britain and Ireland, it is the other materials that make it outstanding. Wood, leather, and textile (silk, linen and wool) wrapping and bundling were also preserved

within this hoard and beyond the precious metals a lidded vessel also contains glass, rock crystal, mineral elements and even two curated balls of dirt.

The non-metallic elements of this assemblage tell us about the structure of this hoard and different ages of associated materials. The lidded vessel and some of its contents were curated for centuries before being deposited. On a macro-scale there are four clear groups and on a micro-scale there is a structure to the packing of the wrapped and lidded vessel and the bundles within it.

The Galloway hoard bears similarities to many contemporary silver bullion hoards but the differences are also many and significant and bear comparison to other types of complex deposit from other time periods (burials, treasuries, relic collections etc). Within this one hoard we seem to have several motivations for hoarding, collecting and curating a variety of materials as well as evidence for how the parts came together as an assemblage.

4 IN AND OUT OF CONTEXT. BRONZE AGE POMERANIA FROM HOARD STUDIES PERSPECTIVE

Abstract author(s): Slusarska, Katarzyna (Uniwersytet Szczeciński)

Abstract format: Oral

Bronze Age hoards from Western Pomerania were subjects of many studies starting from the dawn of prehistorian interests in this region. However, due to the turbulent history of the 20th century, some of those finds are lost in museum collections. Some are known only from draft archival reports, frequently lacking basic information on the location, context, etc.

The deposits from Western Pomerania contain objects (e.g. hanging vessels, plate fibulas, razors) corresponding with the Nordic or Northern German style of metallurgy. Of the total number of over 70 collective deposits from the Szczecin Lowland, almost 1/3 provide information about the wet context of finding (swamp, peat bog or lake bed). Meanwhile, archival data on dry context deposits often provide information on ceramic or wooden containers in which the items were deposited. Among those finds, at least some could be destroyed graves. This hypothesis seems plausible because cremation graves from the early phases of the Lusatian culture contain vessels and sets of metal objects (e.g., the so-called princely grave from Banie). Some deposits, e.g. from Wołczkowo, Community Police, have the ambiguous description “grave or hoard”. The information on the wooden container or other non-metal finds accompanying metal objects also brings new perspectives to discussing hoarding as a cultural practice, especially regarding deposits found on bronze age cemeteries.

This study aims to reanalyse archival data on period IV to VI hoards from Szczecin Lowland to verify their status (a hoard, not a hoard) and set them in the broader context of settlement patterns. That can provide a deeper insight into the land use and meaning of hoard deposition in the Late and Final Bronze Age Lower Oder region.

5 THERE'S MORE THAN MEET THE EYE - WOOD, BARK, STRAW AND HONEY IN A DANISH LATE BRONZE AGE DEPOSITION

Abstract author(s): Beck, Malene (Østfyns Museer) - Frost, Lise (Moesgaard Museum, MOMU)

Abstract format: Oral

In 2020 a deposition of female ornaments from the Late Bronze Age was discovered and excavated on the island of Funen, Denmark. The find has produced new information about the Bronze Age tradition for depositions in springs as well as the use of organic materials deposited together with the metal objects.

Favorable preservation conditions for organic material, has provided information about how the ornaments were used, how they were packed in connection with the deposition, as well as knowledge about the landscape in which the deposition took place. The paper underlines the necessity of scientific analyses when investigating metal depositions, in order to shed new light on the otherwise invisible elements of the finds.

The ornaments were stored in a bark bucket and carefully packed with patches of straw, when they were deposited. Pollen and NPP (Non Pollen Palynomorphs) analyses help provide a reconstruction of the landscape in which the deposition was made. Thereby the find makes a valuable contribution to our knowledge about the Bronze Age communities' use of landscapes located in border areas or completely outside settlements and fields. The NPP analyses revealed remains of bee hairs and combined with a high amount of pollen from herbs of the Bracciaceae family this indicates, that honey or more likely honeycombs were a part of the deposition, either as an element chosen specifically for the deposition or as the content of a hanging vessel.

Based on the stratigraphic observations from the excavation, the preserved organic materials in the find and the scientific analyses, a chaîne opératoire is presented for the various sub-elements and phases of the depositional act. The chaîne opératoire incorporates observations from older finds of metal hoards, making comparisons of similar patterns or elements possible.

6 ABOUT NON-METAL OBJECTS IN THE HOARDS OF THE “BÎLVĂNEȘTI-VINȚ” SERIES FROM MODERN ROMANIA AND THE IMPORTANCE OF THE DISCOVERY CONTEXT

Abstract author(s): Bors, Corina (National History Museum of Romania - MNIR)

Abstract format: Oral

Given the topic about the non-metal objects in hoards, this paper will present newer (Tărtăria I and Tărtăria II) and older (Vaidei, Blandiana, Alba Iulia – Partoș, Vințu I – III, Bîlvănești etc.) finds assigned to the “Bîlvănești-Vinț” series (DFS VI), the First Iron Age, from modern Romania, the last series of bronze & iron objects deposits of this kind, certain containing also non-metal elements like pottery and organic material. The comparative analysis with other type of depositions (such as vessels assemblages or funerary inventories) from the period of Basarabi culture (ceramic style) gives a better understanding about the structure of the (bronze & iron objects) hoards, as well certain similarities, but also obvious differences with the other contexts of depositions. Considering two types of non-metal objects from such assemblages, namely pottery and organic material further understanding can be achieved as regards the metal hoards. Last but not least, a series of observations will be made about the patterns of deposition for such finds, but also about the importance of the discovery context and their proper documentation by archaeological excavation and not by illegal retrieval made by non-archaeologists.

7 WHAT DID THE BRONZE AND IRON AGE HOARDS IN SOUTH BOHEMIA CONTAIN?

Abstract author(s): Chvojka, Ondrej - Šálková, Tereza - John, Jan (University of South Bohemia)

Abstract format: Oral

In South Bohemia, more than 150 Bronze Age hoards and about 20 mass finds from the Iron Age are known today. The vast majority of these are hoards of metal (bronze, copper, iron or gold artefacts), with only two sets representing hoards of ceramic vessels. No hoards of artefacts made of organic materials have been recorded so far, which may, however, be due to the poor soil conditions in the region, which, with few exceptions, do not allow the preservation of organic materials. Nevertheless, the presence of ecofacts or parts of artefacts made of organic materials has been recorded in several hoards. In the Early Bronze Age, we can mention some hoards of copper ingots that were tied with grass strings. Remains of organic strings or wrappings also come from other hoards of the Early to Late Bronze Age. Their identification has subsequently resulted in a number of radiocarbon dates. Pollen grains have been preserved on the surface of some metal artefacts, allowing the local natural environment at the time of the depot to be reconstructed. Human bones were also recovered from a deposit of six bracelets and a glass ring from the Early Iron Age at Spolí, allowing the situation to be interpreted as a sacrifice. In addition to organic materials, some of the metal hoards contained ceramic vessels in the role of containers, and exceptionally amber beads. However, in terms of finding environments, no distinction can be made between hoards of metal artefacts and hoards with objects of other materials. We believe that the absence of ceramic, amber, or organic materials in most South Bohemian hoards is primarily due to the way they were deposited, found, and preserved, not to a different type of prehistoric human behavior.

8 SPECIALLY PLACED CERAMIC ASSEMBLAGES FROM THE LATE MIDDLE BRONZE AGE IN THE CARPATHIAN BASIN

Abstract author(s): Szabó, Nóra (Institute of Archaeology Research Centre for the Humanities) - Szilas, Gábor (Budapest History Museum Aquincum Museum)

Abstract format: Oral

The complexity of the deposited assemblages in the Carpathian Basin displays a significant increase during the Bronze Age. In the Early Bronze Age pottery depositions were limited to simple deposits consisting of small mugs. This tradition continued in the Middle Bronze Age (MBA) when metal objects were also hidden in ceramic vessels. In the Late Bronze Age there is significant quantitative and qualitative growth in the character of deposits: by this time, we can clearly distinguish several types of deposits based on the function and number of the vessels.

When and what changed the practice of ceramic deposits and the composition of the contained vessels? The answer may be found at the end of the MBA, when structured depositions consisting mainly of containers and pots, often with secondarily, heavily burnt fragments, appear hidden or placed inside the features of settlements, showing a quite different phenomena from the simple storage pits. The number of these types of features has grown in parallel with the large-scale excavations, and several such features have been discovered in Budapest and its surroundings.

The aim of this presentation is to introduce these unknown phenomena and to attempt to reconstruct the social practices behind them. Beyond typo-chronological and functional analyses, it is the exploration of the human thought behind the specially treated objects that may explain the pottery deposition activities that evolved during the Bronze Age. In the case of the metal-, ceramic-, and mixed deposits (metal objects placed in vessels) at the end of the MBA, it is not only the differences in the composition of the objects, but also the ritual act behind each type, as revealed by the spatial differences and the fragmented or otherwise manipulated objects that can be observed.

9 CERAMIC AND SPECIAL DEPOSITIONS DURING THE LATE BRONZE AGE GÁVA CERAMIC STYLE

Abstract author(s): Kósa, Polett (Eötvös Loránd University; Szent István Király Múzeum)

Abstract format: Oral

Metal and ceramic hoards were the most well-known phenomena during the Late Bronze Age in the eastern part of the Carpathian Basin. The Ha A1–B1 ceramic hoards were collected and sorted into three main groups based on their inclusions by Gábor V. Szabó. They could either contain some large and medium-sized storage vessels (e.g. Tiszacsege); lone standing, decorated large storage vessels (e.g. Tiszaladány); or drinking and serving sets consisting of several pieces of cups, bowls, and food or beverage containers (e.g. Tiszapüspöki).

Furthermore, some special depositions can also be mentioned from this period. Two examples from Baks-Temetőpart, a classical Gáva ceramic style settlement, should be highlighted. One of them is a ritual posthole deposition, while the other is a pit that contains the remains of a probable feast. Posthole depositions were known since the Early and Middle Bronze Age from the western territories (e.g. Austria), but not from the Gáva culture area. However, storage pits were more commonly used for special depositions since the pre- and proto Gáva periods.

In my presentation, I would like to give a comprehensive picture of the ceramic vessel hoards of the Late Bronze Age in the East Carpathian Basin and present some combined (ceramic and animal remains) special or ritual depositions for the first time. It will also be briefly addressed what the similarities and differences are between ceramic and metal vessel hoards from this period.

10 BEYOND WETLAND AND PYRE. APPROACHING EARLY IRON AGE CERAMIC VESSEL DEPOSITS IN WESTERN HUNGARY

Abstract author(s): Soós, Bence (Hungarian National Museum; Eötvös Loránd University)

Abstract format: Oral

Research of the Early Iron Age (EIA) in Transdanubia, i.e. western Hungary, still heavily focuses on the funerary evidence, so much so that the few EIA metal hoards in the region have regularly been seen associated with funerary customs. In light of the large number of excavated settlements in recent decades, one begins to feel uneasy about the funerary character dominating depositional practices and ritual customs of the Hallstatt Period communities. The increasing evidence from the domestic sphere of the period strongly suggests that depositional practices of the Hallstatt communities could have been multi-faceted and more complex than previously thought. Intentionally deposited ceramic assemblages discovered within settlements, in the region largely unknown to previous research, are crucial in this regard.

In my paper, I focus on these assemblages. First, I evaluate them in the context of the settlements where they were unearthed. Secondly, the question of their funerary character has to be addressed. Vessel sets comprising elaborate ceramics are characteristic elements of the EIA burial customs and burial assemblages. Hence, looking at ceramic vessel deposits, comprising similar vessels, found within the domestic sphere gives us insight into the relationship between the mortuary ritual and the depositional practices directly not associated with burials. In addition, comparing ceramic deposits in settlement contexts to metal hoards of the period offer a new angle in interpreting the latter category of deposits. With this, my aim is to provide an overview of Hallstatt Age depositional practices in Transdanubia and the possibilities of interpretation.

11 MANIPULATIONS OF WOODEN SPEARHEAD PARTS IN LATE BRONZE AGE HOARDS FROM HUNGARY

Abstract author(s): Tarbay, János Gábor (Hungarian National Museum - Magyar Nemzeti Múzeum) - Maróti, Boglárka (Nuclear Analysis and Radiography Department, Centre for Energy Research)

Abstract format: Oral

Hundreds of bronze spearheads were discovered in metal hoards in Hungary during the Late Bronze Age (1450–850 B.C.). However, only a handful of them contained organic parts, such as wooden shafts or wooden pegs, due to the unfavourable preservative conditions of this region. Since spears are essentially composite weapons, their organic and metal parts are equally important in respect of their function and symbolic meaning.

When the metal head of such a weapon is found in a hoard either intact or in a manipulated (bent, broken, burned) state, one should also consider what could have happened with the wooden parts. Were these objects dismantled prior to the hoard selection, and only the metal heads manipulated and deposited? Was only the wooden part manipulated and the metal head left untouched, which would render the category of 'intact' an incorrect term during the analysis of fragmentation patterns? Is the positioning of the spearheads evidence that they could have been deposited in a hafted state? Is it possible that a spear thrust into the ground (vertical position of spearheads) marked and made the metal hoards reversible?

Our paper elaborates on these questions and possibilities with examples from Hungary, showing that data on context, documentation of technological and wear traces, and Neutron Imaging technique could provide us with valuable information on this topic even in the least favourable region for the preservation of organic parts.

The paper is part of Project No. 134910, which has been implemented with the support provided by the National Research, Development, and Innovation Fund of Hungary, financed under the PD_20 funding scheme (Project 134910).

12 DEPOSITS OF CASTING MOULDS. THE „REAL“ HOARDS OF METALLURGISTS?

Abstract author(s): Nowak, Kamil (Institute of Archaeology Nicolaus Copernicus University in Toruń)

Abstract format: Oral

Researchers often take topics related to the so-called hoards of metallurgists. Linking specific hoards with the activity of metallurgical workshops dates back to the end of the 19th century.

The term 'hoards of metallurgists' is mainly used for deposits containing characteristic metal equipment (raw material, tools). Hoards of metal objects are marked with many levels of meaning – from economic ones related to the raw material value (number of objects and their weight) through the importance of craftsmanship (involvement of a highly qualified specialist), place of deposition (dry and wet area, sacred-profane), the presence of local objects or imports. However, they are always metal objects. It is difficult to determine which hoard was only a raw material stock for further processing and which could have a broader pool of meanings related to the traditions, rituals, or rites prevailing in a given community.

During my speech, I would like to discuss the phenomenon of depositing the stone casting moulds, which I understood as a 'real' hoard of a metallurgist. In the case of most deposits of this type, they contain casting moulds made of the same type of stone material. The moulds in the hoards bear use-wear traces, meaning they were fully functional tools. Also, the number of tools in this type of deposit is diversified. There is a noticeable tendency to deposit multi-sided and multi-negative casting moulds.

Depositing only tools related to the pyrometallurgical transformation of metal is a rare phenomenon. As part of my paper, I will characterize the preliminary research results in the context of Central Europe.

My research is financially supported by the National Science Center Poland (project no. 2021/40/C/HS3/00097) and by Nicolaus Copernicus University in Toruń under the University Centre of Excellence programme.

13 CARPENTER'S HOARDS IN MINOAN CRETE, METALLIC TOOLKITS ? REASSESSMENT OF THE CONTEXTS AND ASSEMBLAGES OF A SPECIFIC KIND OF DEPOSIT

Abstract author(s): Loescher, Valentin (Paris 1 Panthéon-Sorbonne; UMR 7041 ArScAn Protohistoire égéenne; EUR ArChal)

Abstract format: Oral

Hoarding practices of metal tools within the settlements are known during the Bronze Age in Crete (3000 – 1050 B.C.). Thirteen of them have been referred to as "carpenter's hoards". A first synthetic study identified a larger panel of 26 hoards or "tool kits" potentially related to woodworking. These attributions, which are based on typology and associations within the assemblages, have been done considering exclusively metallic tools. This is partly due to the publication of the archaeological objects separated by materials, consequence of their study by different specialists.

However, newly published data and a return to first hand publications shows that there were often stone tools associated, and sometimes bronze vases or ceramic artefacts left out of the previous analysis of these hoards.

Thus this presentation aims to interrogate what can be learned about these deposits when considering non metal objects related to the assemblage. It will put in perspective the terms used to describe them (hoards, deposits, toolkits) by analysing the various contexts in which they were found. By doing so, it will also underline the intertwined relationship between different kind of tools and different kind of materials.

14 LUXURY OF THE FEW – SPECTACLE FOR THE MANY. BRONZE AGE HOARDS WITH AMBER FROM NORTHERN HUNGARY

Abstract author(s): Guba, Szilvia (Hungarian National Museum – Forgách-Lipthay Castle Museum) - Tankó, Károly (ELTE - Eötvös Loránd University)

Abstract format: Oral

Hoards are one of the most characteristic phenomena in the cultural landscape of the Bronze Age in NE Hungary. In Nógrád County numerous hoards dated from the late Bronze Age to the Early Iron Age were collected in the past 150 years, while a systematic research (including field survey, aerial and LiDAR imaging) in the surroundings of the sites has only just begun.

As a result, in the past two years several bronze hoards were identified, of which two of the most important are presented here. Both bronze hoards were found undisturbed, in their original position, thus making a micro-stratigraphical excavation within a laboratory setting possible. Seemingly, the first hoard contained only bronze jewellery, such as pins, arm and neck rings, and only the meticulous restoration work revealed remains of fabric in which the objects were neatly and carefully wrapped in. In the second hoard nearly 1300 artefacts were uncovered, of which the non-metal finds are predominant: the large amount of amber beads makes this assemblage to one of the most spectacular deposits of the region. Besides various shapes and sizes of beads, the metal finds are of extraordinary quality and value as well. In our presentation we not only discuss the connection between metal and non-metal artefacts and their importance within depositions, but also the possible non-metal covers or containers of the hoards (textile wrappings, composite bronze and organic vessels).

325 TRACING THE HISTORY OF MEDITERRANEAN HUMAN-ENVIRONMENTAL SYSTEMS USING BIOMOLECULAR METHODS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Coccozza, Carlo (Max Planck Institute for GeoAnthropology; Università della Campania) - Soncin, Silvia - Tafuri, Mary Anne (Università di Roma) - Fernandes, Ricardo (Max Planck Institute for GeoAnthropology; Princeton University; Masaryk University)

Session format: Regular session

The Mediterranean basin lies at the crossroads of three continents. Throughout its rich history, it has been the stage for a succession of political and socioeconomic organisations, the intermixing of ethnic groups, and the emergence and spread of cultural practices intertwined with heterogeneous environmental conditions. This makes the Mediterranean region fertile ground for the study of complex human-environment relationships.

During the past decade, there has been a spectacular rise in the use of biomolecular methods within Mediterranean archaeology. These have been employed to study paleoenvironmental conditions and to reconstruct various aspects of past human lifeways and socioeconomic activities. Multiple case studies using isotopic, proteomics, ancient DNA, and ZooMS biomolecular methods plus their combinations have showcased the immense research potential that these offer to the study of Mediterranean history. The increasing availability of sizable datasets is allowing for Big Data meta-analyses that offer insights into diachronic and regional variations. There is also a growing pursuit, extendable to other archaeological contexts, for wider employment of analytical and modelling techniques that allow for higher resolution descriptions of past phenomena (e.g., compound-specific isotopic analyses, Bayesian modelling, etc.). The future of biomolecular methods in Mediterranean archaeology is assured and important developments in our historical knowledge provided by these should be anticipated.

In this session, we aim to offer an up-to-date overview of the use of biomolecular methods in the study of the relationships between past societies and the Mediterranean ecosystem. We welcome both contributions that introduce methodological improvements employable within Mediterranean contexts and the presentation of case studies.

ABSTRACTS

1 INVESTIGATING THE BRONZE AGE DIET AND MOBILITY IN MENORCA, SPAIN: AN ISOTOPIC ANALYSIS OF THE BINIADRÍS CAVE POPULATION

Abstract author(s): Marciales, Mauricio (SFB1070 “Ressourcenkulturen“ Eberhard Karls Universität Tübingen) - Diaz-Zorita Bonilla, Marta (Institut für Ur- und Urgeschichte und Archäologie des Mittelalters, Eberhard Karls Universität Tübingen; SFB1070 “Ressourcenkulturen“ Eberhard Karls Universität Tübingen) - Alarcón García, Eva - Moreno Onorato, Auxilio (Department of Prehistory and Archaeology, University of Granada) - Timm, Monice (SFB1070 “Ressourcenkulturen“ Eberhard Karls Universität Tübingen) - Escudero Carrillo, Javier (Department of Prehistory and Archaeology, University of Granada) - Ramis, Damiá (Museu de Menorca) - Baten, Jörg (Economic History Department, Eberhard Karls Universität Tübingen)

Abstract format: Oral

The Mediterranean region has undergone extensive research on diet and mobility throughout various time periods. However, the majority of these studies have been concentrated on the Eastern Mediterranean. Investigations on the coasts and islands of the Western Mediterranean have only been conducted in recent decades, and mostly in specific regions of the Iberian Peninsula and Italy. This research aims to address this gap by exploring the Balearic Islands and their relationship with other Western Mediterranean contexts during the Late Bronze Age and early Iron Ages. The Biniadrís Cave in Menorca, Spain, serves as a valuable archaeological site for this investigation, providing a comprehensive chronology for the study of the Talayotic and Post-Talayotic population's diet, subsistence strategies and mo-

bility. Stable isotope analysis on human and animal collagen, including $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$, will be utilized to uncover the dominant sources of food, made possible by the increased resolution provided by Bayesian Models. The study will also incorporate preliminary results of $\delta^{18}\text{O}$ stable isotopes using intraindividual serial sampling from animal tooth enamel from domestic sites in Menorca to shed light on the livestock handling practices of the time, such as transhumance activity and seasonality. The use of a multiproxy stable isotopic analysis will enlighten the interplay between diet and mobility through the use of resources and the landscape. This research aims to fill the gap in the understanding of diet and mobility in the Western Mediterranean and contribute to a broader understanding of the Bronze and Iron Ages populations in Menorca.

2 THE ISOTOPIC LIFEWAYS OF THE INHABITANTS OF ANCIENT PERGAMON

Abstract author(s): Fernandes, Ricardo (Max Planck Institute for Geoanthropology; Masaryk University; Princeton University) - Coccozza, Carlo (Max Planck Institute for Geoanthropology) - Doğan, Turhan (TÜBİTAK MAM) - Tee-gen, Wolf-Rüdiger (Ludwig-Maximilians-Universität München)

Abstract format: Oral

The ancient Kingdom of Pergamon, located at a strategically advantageous crossroads between East and the West, was under the rule of the Attalid dynasty, of Greek descent. This dynasty was largely responsible for the strong promotion of Hellenistic culture making Pergamon a renowned centre of learning, with a famous library. In 133 BC Pergamon was bequeathed to Rome. Although there were attempts to resist Roman dominion it eventually became an important Roman city by the mid-2nd century AD. The city experienced a decline in the 3rd century when it was badly damaged by an earthquake and attacked by the Goths.

To gain an understanding of the dynamics of human lifeways in the ancient city of Pergamon throughout its history, we conducted a carbon and nitrogen stable isotope study of individual human remains. This technique offers us important insights into the main sources of dietary protein consumed by the ancient inhabitants of Pergamon and is indicative of their socioeconomic status, cultural affiliations, and religious practices. In addition, our analysis included radiocarbon measurements to place human lifeways in their chronological context. In this presentation, we will present the preliminary results of our research.

3 INVESTIGATING HUMAN LIFEWAYS IN THE COLLINE METALLIFERE DISTRICT (TUSCANY, ITALY) WITH A MULTIDISCIPLINARY APPROACH: THE CASE STUDY OF MONTIERI CASTLE

Abstract author(s): Mantile, Noemi (Università degli studi della Campania; Mediterranean bioArchaeological Research Advances - MAREa - centre) - Coccozza, Carlo (Max Planck Institute for GeoAnthropology; Mediterranean bioArchaeological Research Advances - MAREa - centre; Università degli studi della Campania) - di Cicco, Maria Rosa - Altieri, Simona (Università degli studi della Campania; Mediterranean bioArchaeological Research Advances - MAREa - centre) - Tafuri, Mary Anne (Sapienza Università di Roma; Mediterranean bioArchaeological Research Advances - MAREa - centre) - Bianchi, Giovanna (Università di Siena) - Lubritto, Carmine (Università degli studi della Campania; Mediterranean bioArchaeological Research Advances - MAREa - centre)

Abstract format: Oral

Our research aims to investigate potential historical connections between subsistence practices and the emergence and decline of Montieri, a castle settlement located in southern Tuscany, Italy. To this scope, we are utilizing a multidisciplinary approach that incorporates the use of stable isotope carbon and nitrogen analysis, radiocarbon dating, Bayesian modelling, and archaeological evidence.

During the 9th-10th centuries, the construction of fortifications was widespread in Europe and the Mediterranean basin, largely for the purpose of exploiting local resources and maintaining military dominance. An example of this is Montieri, a castle that was built to take advantage of the local silver mines and was under the control of the bishop of Volterra. The castle also had a mint and a parish church dedicated to Saint Niccolò. This latter was in use from the 10th to 14th centuries and the skeletal assemblage from this study was recovered from here. Our dataset contains 61 human individuals and 16 faunal specimens.

Preliminary results suggest that the Montieri population had an agro-pastoral economy, and that there was no evidence of sex-based dietary differences. Additionally, the results indicate a moderate intake of marine resources, which could point to economic activities involving trade with coastal Tuscanian settlements. Given the higher economic value of marine-based proteins in comparison with local terrestrial resources, this could be evidence of a flourishing economy based on silver extraction.

This contribution illustrates the efficacy of utilizing a multidisciplinary approach to deduce historical and economic changes and suggests further research on the interplay between humans and the local environment in the Mediterranean region.

4 DIET AND MOBILITY IN NORTHERN ITALY DURING THE NEOLITHIC THRU MEDIEVAL PERIODS

Abstract author(s): Tykot, Robert - Eck, Christopher (University of South Florida) - Maxwell, Ashley (Washburn University) - Temkina, Anastasiia (University of Kentucky) - Vianello, Andrea (University of South Florida)

Abstract format: Oral

Scientific studies of >300 human skeletal remains in the northern part of Italy have been conducted, providing data on dietary changes over time that may be associated with technological, economic, and/or sociopolitical developments including population movements. Presented here are results of stable isotope analyses from archaeological sites in northern Italy near Rome, Florence, Ravenna, the Po Valley, and in the Veneto, representing the Middle Neolithic, Bronze Age, Roman, and Early Medieval time periods. The research questions addressed are the importance of seafood or freshwater fish in the diet; the introduction of millet, a C4 plant; and mobility from childhood to later life. In addition, analyzing individuals allows comparisons to be made based on age, sex, and status. Carbon, nitrogen, and oxygen isotopes on bones and teeth were obtained using established preparation methods and analyses on stable isotope mass spectrometers. The results, integrated with faunal and floral studies, contribute to our understanding of the diet and mobility of individuals in Northern Italy.

Our results suggest that seafood was rarely a dietary staple, even in coastal zones, despite the extensive maritime travel involved by Roman times. Freshwater fish, however, were important in locations near rivers or lakes. Millet, a C4 plant often considered a low status food source, was of minimal use in the Neolithic, but more widely spread by the Bronze Age, and became a staple in the Late Antique period when there was political instability, migration and invasion of Langobard tribes that also had a traditional high-meat diet including pigs as a staple. One hypothesis tested was whether there was hybridization or segregation of cultural practices, with consistent or variable diets among individuals. Mobility is also examined through comparison of tooth (child) and bone (adult) values, with potential differences between males and females based on marital and/or migration practices.

5 DIET IN THE NEOLITHIC TAVOLIERE (PUGLIA, ITALY) USING STABLE ISOTOPE ANALYSIS OF AMINO ACIDS

Abstract author(s): Soncin, Silvia (Department of Environmental Biology and Mediterranean bioArchaeological Research Advances - MAREa - centre, Sapienza Università di Roma) - Craig, Oliver (BioArCh, Department of Archaeology, University of York) - Talbot, Helen (BioArCh, Department of Archaeology, University of York) - Robb, John (Department of Archaeology, University of Cambridge) - Tafuri, Mary Anne (Department of Environmental Biology and Mediterranean bioArchaeological Research Advances - MAREa - centre, Sapienza Università di Roma)

Abstract format: Oral

There is a general consensus that domesticated plants constituted the staple of early farmer diets in Italy, followed by a certain, but not well defined, portion of animal products and almost a total lack of either freshwater or marine fish. In the past few decades, a number of studies have applied stable isotope analysis (SIA) of bone collagen as direct evidence to either confirm or complement this scenario. However, SIA fails in discriminating well between animal products and cereals. In addition to this, it has been shown that the marine isotopic signal is less distinguishable in the Mediterranean compared to other settings, therefore making it difficult to assess the contribution of this source. Recently, Compound Specific Stable Isotope Analysis of Amino Acids (CSIA-AA) has proven to be successful at better defining the diet across Mediterranean individuals. Here, we apply CSIA-AA to explore dietary habits of Neolithic individuals living in the Apulian Tavoliere, Italy. The individuals analysed come from two middle Neolithic sites, Masseria Candelaro and Passo di Corvo, located approximately 10 km from one another in the Apulian Tavoliere. The Tavoliere is an alluvial plain of northern Puglia south of the Gargano promontory, characterised in the past by extensive wetlands and lagoons with freshwater discharges. Thanks to CSIA-AA, we are able to show that the majority of individuals have predominantly plant based diets, although animal products and fish were more dominant for some individuals, suggesting that the Neolithic diet was more variable than some have suggested. More broadly, we show that CSIA-AA is a powerful tool in disentangling diet-related questions in past Mediterranean contexts.

6 THE EXPLOITATION OF LIGNITE IN THE BRONZE AGE AEGEAN REVEALED THROUGH BIOMOLECULAR ANALYSIS

Abstract author(s): Spiteri, Cynthianne (Dipartimento di Scienze della Vita e Biologia dei Sistemi; Institute for Prehistory, Early History and Medieval Archaeology, Eberhard Karls University Tübingen) - Buckley, Stephen (Department of Archaeology, BioArCh, University of York; Institute for Prehistory, Early History and Medieval Archaeology, Eberhard Karls University Tübingen) - Power, Robert (University College Dublin, School of Archaeology) - Eisenmann, Stefanie (Faculty of Theology, Humboldt Universität zu Berlin) - Fletcher, Joann (Department of Archaeology, University of York) - Hallager, Birgitta (The Swedish Institute at Athens) - Maran, Joseph (Institute for Prehistory, Protohistory and Near Eastern Archaeology, University of Heidelberg) - Andreadaki-Vlazaki, Maria (Excavation House "Sevach") - McGeorge, Photini (The British School at Athens) - Stockhammer, Philipp (Institute for Pre- and Protohistoric Archaeology and Archaeology of the Roman Provinces, Ludwig Maximilian University Munich; Max Planck Institute for Evolutionary Anthropology)

Abstract format: Oral

Here we present new data on the earliest archaeometric evidence for the use of lignite (brown coal) in Europe, shedding new light on the use of combustion fuel in the 2nd millennium BCE Eastern Mediterranean. Dental calculus of 67 individuals from several sites in the Aegean, Egypt and the Near East was analysed using Sequential Thermal Desorption/Pyrolysis-Gas Chromatography-Mass Spectrometry and Polarizing Microscopy. We identified scant evidence for the use of combustion markers in the calculus from Egypt, however all other individuals showed clear evidence for the burning of Pinaceae wood, hardwood (e.g. oak and olive), and dung. Significantly, individuals from the Palatial Period at the Mycenaean citadel of Tiryns and the Cretan harbour of Chania showed evidence for the inhalation of smoke from lignite, a thousand years prior to the mention of the use of this resource by Theophrastus (374/369 – 288/285 BC) in his work, *On Stones*. We suggest that lignite was exploited at the time in connection with the manufacture of metals, ceramics and glass, which were important and highly traded resources during the Bronze Age. Significantly, we find evidence for the inhalation of lignite in both males and females, suggesting that both biological sexes were involved in crafts production.

7 GROUPING GROUPERS: USING COLLAGEN PEPTIDE MASS FINGERPRINTING TO DEMONSTRATE 4000 YEARS OF EPINEPHELUS AENEUS ABUNDANCE IN ISKENDERUN BAY, TURKEY

Abstract author(s): Winter, Rachel - de Kock, Willemien (Groningen Institute of Archaeology, University of Groningen) - Mackie, Meaghan (The Globe Institute, University of Copenhagen; School of Archaeology, University College Dublin; Department of Life Sciences and Systems Biology, University of Turin) - Ramsøe, Max (The Globe Institute, University of Copenhagen) - Collins, Matthew (The Globe Institute, University of Copenhagen; McDonald Institute for Archaeological Research, University of Cambridge) - Taurozzi, Alberto (The Globe Institute, University of Copenhagen) - Çakırlar, Canan (Groningen Institute of Archaeology, University of Groningen)

Abstract format: Oral

Groupers are large-bodied, solitary predatory fishes found globally in tropical and subtropical coastal rock reef ecosystems. Within the Mediterranean Sea they are ecologically and commercially important, with high ubiquity in archaeological contexts. There are six species of groupers indigenous to the Mediterranean, with four species belonging to the *Epinephelus* genus. While the dusky grouper, *Epinephelus marginatus*, is the best studied and most emblematic species in the Mediterranean, data regarding species abundance and distribution prior to the commercialised fishing of the 20th century is largely unknown. In this study we have set out to test the viability of using Zooarchaeology by Mass Spectrometry (ZooMS) for intra-genus, species level identifications to inform the past biogeography of Mediterranean groupers. Using LC-MS/MS data, collagen type I amino acid sequences were de novo reconstructed for four *Epinephelus* spp. and subsequently species-specific collagen peptide biomarkers were identified and validated. With these novel biomarkers, we analysed Middle to Late Holocene grouper bones (n=23) from the archaeological site of Kinet Höyük located in the northeastern corner of Iskenderun Bay, Turkey. The successful application of ZooMS revealed a past abundance and dominance of one species, *E. aeneus*, in Iskenderun Bay which is consistent with current grouper species abundance in the region. Due to the small home ranges of groupers, this finding suggests millenia long, local population persistence of *E. aeneus*. Our case study highlights the future potential for species level reconstructions of past fisheries and biogeography in the Mediterranean using ZooMS.

8 INFANT FEEDING PRACTICES AT THE CORE OF THE ROMAN EMPIRE. BAYESIAN INCREMENTAL DENTINE STABLE ISOTOPE ANALYSIS FROM POMPEII AND OSTIA

Abstract author(s): Coccozza, Carlo (Max Planck Institute of GeoAnthropology; Università della Campania) - Lubritto, Carmine (Università della Campania) - Rossi, Paola Francesca (Parco Archeologico di Ostia Antica) - Amoretti, Valeria (Parco Archeologico di Pompei) - Mantile, Noemi - Altieri, Simona - di Cicco, Maria Rosa (Università della Campania) - Tafuri, Mary Anne (Sapienza University of Rome) - Fernandes, Ricardo (Max Planck Institute of Geo-anthropology; Princeton University; Masaryk University)

Abstract format: Oral

The study of infant feeding practices in human lifeways is widespread and variability in exclusive breastfeeding and weaning systems can be attributed to anthropic behaviours. This has enabled delving into cultural traditions and socio-economic strategies, as well as the impact of local resources on the process of nourishing infants. Multiple archaeological, anthropological, and biomolecular techniques have been employed to disclose these practices. One of the most effective was revealed to be stable isotope analysis of dentine increments in combination with Bayesian modelling of data.

In our presentation, we will discuss infant feeding practices at the Roman sites of Pompeii and Ostia investigated using incremental dentine stable carbon and nitrogen isotope analysis. Bayesian modelling of measured data was used to determine dietary shifts during infancy, including the timing for exclusive breastfeeding and the end of weaning. We interpreted obtained results in view of cultural, environmental, social, and biological aspects.

Obtained results suggest that the weaning process in Pompeii and Ostia followed the recommendations of Graeco-Roman physicians, starting around six months and ending at two years of age. Similar results were previously found for Roman Thessaloniki (Greece), although in Bainesse (England) some time-extended weaning processes, up to four or five years of age, were observed. This suggests variability in infant feeding practices within the Roman world and in particular between Mediterranean and northern settlements.

9 ABOUT ISOTOPES, REMAINS, AND CLASSICAL ANTIQUITY: IDENTIFYING DATA GAPS IN MEDITERRANEAN BIOARCHAEOLOGICAL RESEARCH USING THE ISOTÓPIA DATABASE

Abstract author(s): Formichella, Giulia - Soncin, Silvia - Tafuri, Mary Anne (Sapienza University of Rome) - Lubritto, Carmine (Università degli studi della Campania “Luigi Vanvitelli”) - Craig, Oliver (University of York) - Fernandes, Ricardo (Max Planck Institute of Geoanthropology; Princeton University; Masaryk University) - Coccozza, Carlo (Max Planck Institute of Geoanthropology; Ludwig-Maximilians-Universität München; Università degli studi della Campania “Luigi Vanvitelli”)

Abstract format: Oral

Our contribution aims to review potential data gaps in isotopic research for Classical Archaeology through the creation of Isotópia, a database of stable isotope measurements for antiquity. Over the centuries, the legacy of the Greek and Roman civilisations has been studied by generations of antiquaries and historians. Their primary focus was the elite portion of these societies, with research mainly involving historical reconstruction of the gestae of given politicians and the assessment of visible art and monumental remains. In recent decades, a more anthropology-based approach has offered new angles of investigation, such as the application of stable isotope analysis to gain information on subsistence practices and mobility of ‘illiterate’ society, plus novel environmental perspectives.

Large volumes of isotopic data can provide a different research overview at different scales and resolutions. When combined with multidisciplinary sources of evidence (e.g. written documents, archaeological record, etc.), this approach has proven to be highly effective. Furthermore, the collection of isotopic data across a large spatio-temporal span can be used for a meta-analysis of research gaps. Isotópia highlighted where additional isotopic research in Classical archaeology is needed. It was found that there is a striking disparity in the number of faunal and plant specimens compared to human individuals. This review also revealed a main research focus on 5th Century BCE Greece and in Italy and Britain for the Roman imperial period, with isotopic data for other regions such as Gallia, Pannonia, Dacia, North Africa, and Asia Minor being scarce. This is likely due to a combination of current political circumstances and a disproportion of funding interests for certain locations and periods.

A. GLUTAMINE DEAMIDATION RATES OF BONE COLLAGEN AT THREE LATE PLEISTOCENE SITES IN ISTRIA (CROATIA)

Abstract author(s): Vidas, Lia (Centre for Applied Bioanthropology, Institute for Anthropological Research) - Silvestrini, Sara (Department for the Cultural Heritage, University of Bologna) - Lugli, Federico (Department for the Cultural Heritage, University of Bologna) - Sommella, Eduardo - Salviati, Emanuela - Crescenzi, Carlo - Campiglia, Pietro (Department of Pharmacy, University of Salerno) - Janković, Ivor (Centre for Applied Bioanthropology, Institute for Anthropological Research) - Benazzi, Stefano (Department for the Cultural Heritage, University of Bologna)

Abstract format: Poster

In the last decade, palaeoproteomics has been increasingly used in studies of archaeological material, especially for taxonomic identification of highly fragmented faunal assemblages. Yet, the mechanisms of protein conservation, or rather decay, require better understanding. Therefore, the efforts to correlate these processes with posttranslational modifications (PTMs) in protein, most commonly collagen, are under way. Glutamine deamidation is one of the most common PTMs and has been proven to indicate the state of preservation of collagen in osseous tissues. The deamidation of glutamine to glutamic acid results in a mass shift of +0.984 Da that can be calculated from mass spectrometry data, a key step in all proteomic analyses. These do not rely solely on their position in the collagen chain, but also on the age of the tissue, the characteristics of the sediment, microclimate of the site and other taphonomical agents.

In our analysis, we compare glutamine deamidation rates of faunal samples from three Late Pleistocene sites from Istria, Croatia: Romualdova pećina (Middle Palaeolithic cave site), Abri Kontija (early Upper Palaeolithic rockshelter) and Ljubičeva pećina (late Upper Palaeolithic cave site), as a part of the PREHISTRIA project (HRZZ IP-2019-04-7821) and iNEAL Cost Action (CA-19141). Bone collagen was extracted with ammonium bicarbonate and analysed through MALDI-ToF mass spectrometry. By examining glutamine PTMs at these sites and comparing the results with published data, we infer about the influence of site features, antiquity and other taphonomic factors, on the preservation of collagen in bones. This approach can be used as a low-cost prescreening method, helping to plan further biomolecular analyses (aDNA, radiocarbon dating, isotopes etc.) but also be a valuable contribution in understanding protein decay dynamics related to different contexts, periods and diagenetic processes.

327 VARIATIONS ON 'THE ISLAMIC': ALTERNATIVES, RESISTANCE AND CONTESTATION IN ISLAMIC ARCHAEOLOGY

Session theme: 6. Contested Pasts & Presents

Session organisers: Carvajal Lopez, Jose (University of Leicester) - Shingiray, Irina (University of Oxford) - Govantes Edwards, David (Universidad de Cordoba) - Hernandez Robles, Alicia (Universidad de Murcia) - Dikkaya, Fahri (TED University, Ankara)

Session format: Regular session

Islamic societies have been all too often portrayed and analysed from the perspective of orthodoxy, towns and elitism. Groups within Islam that did not participate in mainstream religious practices and beliefs or who lived beyond the networks of interest of urban elites and dominant dynasties are usually considered 'heterodox' and 'outsiders'. Following recent criticism by Shahab Ahmed, the perspective on "what is Islam" needs to be widened to fit the variations on 'the Islamic' within. Islam is not a programme or a set of principles imposed from the top, but a medium and a vocabulary from which the hermeneutical engagement of the believers generates multiple meanings connected by a shared commonality.

In this session we search to shed light on this variation by focussing on processes and communities belonging to 'the Islamic' but working in the margins of, or against established powers and structures. We aim to get to know and to discuss case examples of social groups that contested states and institutions within the Islamic world, that offered alternative or dissident social, economic or religious organisations to those that were hegemonic.

We invite colleagues to present case studies, for example, about groups considered 'heterodox' in their context, and even about non-Muslim groups as long as they expressed their faith in Islamic terms. Another possibility is the analysis of groups weaving alternative forms social organisation to those usually considered 'central' by mainstream approaches: nomads, peasants, gendered groups, ethnic minorities, etc.

This session continues a successful chain of sessions in EAA on Islamic archaeology, where different regions and their connections have been considered in the past.

1 HEADS OR ALTARS: AN ANALYSIS OF SASANIAN RELIGIOUS CULTURE IN EARLY ISLAMIC NUMISMATICS

Abstract author(s): Ouellet, Jonathan (Leiden University)

Abstract format: Oral

The silver coinage of the Sasanian Empire with its iconic shah on the obverse and the fire altar with its priests on the reverse is one of the key pieces of material culture and numismatic data to understanding the economy of the Late Antique and Early Islamic period. The religious nature of the Shah and his fire alter interestingly does not change in the Islamic period until a new coinage is minted entirely under ,Abd al-Malik. It is the intent of this presentation to examine what role religious designs play in the usage of coinage in Central Asia during the fall of the Sasanian Dynasty and the Early Islamic Period. This question will help us in our understanding of religious traditions and economic policies that defined Islam during the period in question. The answers can be found by looking at urban centres such as Bukhara (in modern-day Uzbekistan) which contained a large number of non-Muslims who had to adapt to the emergence of the new power in the region. Examining the coinage from Bukhara during this time period reflects a religious and economic Persian(ate) tradition and shows how coins took a role beyond their monetary value. The coinage of Bukhara also shows an example of how religious imagery can sometimes be modified to suit a new system of governance without being resistive in nature.

2 THE ISLAMIC BAYDHA PROJECT: INVESTIGATING A RURAL ISLAMIC COMMUNITY IN THE HINTERLAND OF PETRA

Abstract author(s): Sinibaldi, Micaela (University of Warsaw; Cardiff University)

Abstract format: Oral

The Islamic Baydha Project, launched in 2014, researches an Islamic-period village in the hinterland of Petra, Jordan. It is a project of archaeological investigation, training and community engagement. Research has revealed what is so far the most extensive evidence of an Islamic community, as well as the only two mosques ever found and excavated in the Petra region until now. The settlement phases associated to the Islamic mosques were preceded by earlier phases of habitation or frequentation of the area; results therefore support the conclusions, already established on the basis of the growing archaeological evidence at the center of the Late Petra Project, that the Petra region was never completely abandoned after the Nabataean and Byzantine periods—contrary to the widespread, traditional narrative, that sees a complete lack of stable settlement in Petra during the Islamic period, only interrupted by a short revival during the Crusader period.

The Islamic settlement at the village, probably consisting of a few hundreds of inhabitants, was built on the structures of the Nabataean and Byzantine periods, but the village would probably have been inhabited by Muslims only from the Middle Islamic period; the majority of the population in the overall region was Christian until well after the Crusaders controlled the area in the 12th century.

The study of stratigraphy suggests that one of the mosques was probably built after the other was damaged by an earthquake. The structure of the rural mosques is extremely simple; both artifacts and architecture offer very scarce material to support an understanding of chronology, connection to the nearby village and ritual, and reveal a very simple life standard and building techniques for the community of worshippers, whose economy was largely based on agriculture.

3 ORDINARY PEOPLE INHABITING THE CITY: INSIGHTS FROM MADINAT QURTUBA'S WESTERN SUBURBS

Abstract author(s): González Gutiérrez, Carmen (University of Córdoba)

Abstract format: Oral

This contribution will present, share and discuss the conceptual and methodological bases of DYĀR: Vivienda y ar-rabal: espacios domésticos e iniciativa privada en un sector occidental de Madīnat Qurṭuba (Universidad de Córdoba). This research project focuses on the archaeological analysis of a particular sector of the former Qurtuba dated roughly in the IX-X centuries, fully and extensively excavated in the last years but barely published yet. The objective is twofold: First, we want to address how life was developed in the neighbourhood after the first Umayyad planning by exploring the relations established between singular infrastructure and facilities for the community -an almunia and a secondary mosque- and dwellings. Secondly, we introduce the gender perspective for a closer examination of the relationship between women -perhaps the most unknown human agent in the creation of the city-, domestic spaces and the activities that they carried out in and outdoors. From these premises, we aim to better understand the

influence and scope of regular individuals in the creation, configuration and modification of urbanism and domestic spaces, as well as clarifying historiographical stereotypes about female activities in houses and in the city. This emphasis on particulars builds towards bottom-top approaches to identify the influence and scope of private initiative in the design and evolution of urban space and to sketch a social profile of the inhabitants of the city beyond the already well-known elites.

4 HOMOGENEISATION, MOVEMENT AND RESISTANCE: CREATING GENDERED ISLAM IN ISLAMIC HOUSEHOLDS

Abstract author(s): Herran Subinas, Mikel (University of Leicester)

Abstract format: Oral

In the study of domestic environments in Islamic Iberia, the courtyard house has often been posited as the model of Islamic living. Based on pre-Islamic Mediterranean models, the courtyard house with a bent-axis entryway is regarded as epitomizing values often associated with Islam such as gender segregation, privacy and control of women (Cañavate Castejón 2012). Yet far from a linear development towards a particular model, the early centuries of Andalusian archaeology are filled with different approaches to domestic life. Moreover, the so-called standard of the courtyard house is not characterized by control, but by mobility and multifunctionality. While specific spaces and the control and segregation of activities may be a symbol through which only some enact their socioeconomic position, in most households, the courtyard, or individual rooms are continuously transformed throughout the day for differing activities and domestic labour. This, however, is not reflective of a lack. The continuous dynamic between the attempts at homogenisation and the lines of flight, the resistance to singular movement enable the house to become the scene for the creation of meanings of Islam, and Islamic livings.

In this paper, I will analyse households in urban contexts that have been classified as courtyard houses. At the crossroads between status and gender, movement allows us to further nuance the landscape of how gender was enacted in the private and often unseen context of the house.

5 ISLAM(S) OF THE HORN OF AFRICA: AN ARCHAEOLOGICAL APPROACH TO DIFFERENT ISLAMIC MATERIAL EXPRESSIONS AND SPACES IN MEDIEVAL PERIOD

Abstract author(s): Gómez, Carolina (Incipit - Institute of Heritage Sciences)

Abstract format: Oral

Islam first arrived in the Horn of Africa around the 10th century and expanded throughout the region through several routes. One of these axes run north-south through Ethiopia and branches out and extends into other neighbouring areas of the Horn of Africa. This process gave birth to a series of sultanates that will be the ultimate expression of the establishment and adoption of Islam in the region. However, although a particular 'form' of Islam emanates from these sultanates, the implementation and development of Islam in the Horn of Africa was a disparate and diverse process. Thus, different human groups, in different regions and over several centuries, expressed the principles of Islam through different religious traditions, ways of professing the faith and even new and different material expressions. This paper aims to provide an archaeological approach and analysis of case studies in which these various expressions of the new faith are reflected in the materiality of the medieval Muslim Horn of Africa. It will analyse spaces in which structures, funerary elements and objects of material culture express the adoption and incorporation of Islam into the culture and beliefs of the inhabitants of the region while, at the same time, they are also symbols of the non-complete rupture with previous traditions, giving rise to expressions that are not conceived as orthodox of the new Muslim faith that has recently arrived in Africa.

6 FROM "BAD" CHRISTIAN TO "BAD" MUSLIM. RELIGIOUS CONVERSION TO ISLAM AT TUNGUL (OLD DONGOLA), SUDAN IN THE 14TH-18TH CENTURY

Abstract author(s): Obluski, Artur (Polish Centre of Mediterranean Archaeology, University of Warsaw)

Abstract format: Oral

The presentation is a case study of conversion of once Christian community of Tungul, the capital city of Makuria to Islam marked also by the collapse of Makurian state. The official date of conversion is placed in year 1317, when the first Muslim king established a mosque in a prominent building in the city. Yet, Gullam Allah, one of the first Islamic missionaries to the region, noticed in the late 14th/beginning of the 15th century that the Muslim community of Tungul "was in extreme perplexity and error". The presentation will narrate the process of conversion to Islam which took place in the shade of Muslim Egypt which converted seven centuries earlier and which installed the first Muslim ruler over the Nubians. How this process unfolded in Tungul; what were the factors and forces shaping the Islam in the city. The main question would be however what was the nature of Islam at the fringes of the Muslim world but still so close to the holy cities.

7 RURAL POTTERS AND THEIR WORKSHOPS IN OTTOMAN CYPRUS: RESISTING A CHANGE

Abstract author(s): Živkovic, Jelena (The Cyprus Institute)

Abstract format: Oral

The Ottoman conquest of Cyprus in 1571 exposed the island's population to institutions of an Islamic state. This change mostly affected major urban centres and the Orthodox church while the majority of population that lived in villages remained on margins of this new political network. The extent of their interaction with an Islamic state is vague, but it is known that they paid taxes and followed socio-economic regulations. This paper discusses the agency of rural potters who belonged to the community that was marginalised by both class and religion. It focuses on two rural ceramic production centres in Cyprus that showed conservatism in technological approaches and repertoire of vessels throughout the Ottoman period (the 16th-19th centuries). The presented data came from the archaeological study of three assemblages as well as the scientific assessment of over 300 samples. The scientific approach included petrographic and chemical analyses of ceramics, slips and glazes that aimed to reconstruct the production technologies and traditions of pottery making. The dynamic of rural ceramic workshops will be compared to other archaeological contexts, such as urban centres and monasteries, for the demonstration of differences.

8 A BEKTASHI DERVISH HERDER IN THE UPLANDS OF ORTHODOX ZAGORI (NW GREECE, 19TH C.): BETWEEN THE SELF AND THE OTHER

Abstract author(s): Moudopoulos-Athanasίου, Faidon (Catalan Institute for Classical Archaeology)

Abstract format: Oral

This contribution offers an insight into the phenomenon of religious coexistence in the Ottoman-era Balkans, through a combined investigation of textual evidence, survey and archaeological ethnography. It tells the story of Hasan Baba, a Bektashi dervish herder whose activities are recorded in the archives of Koukouli, a Christian village in Zagori (NW Greece). The documents reveal the interest of Hasan Baba to build a small 'mansion' (koulia) in the summer pasture he rented from the community. It describes the reluctance of the Christian community, fearing that this action would lead to the seizure of the land by the Bektashi herder. The archive offers a 'plot twist' when Hasan Baba promises to the community that he is building the 'mansion' only for his spirit and personal joy. Upon his retirement from the mountain, Hasan left the structure as an endowment (vakf) to the village church: any herder subsequently renting the summer pasture would have to pay extra to the church, to light the candle of Virgin Mary.

Recent scholarship has revealed instances of coexistence between Christian and (heterodox) Muslim communities in the Ottoman Balkans, in the shape mostly of shared sacred spaces. The time is ripe to consider the footprint of these practices in the broader archaeological 'record' of Ottoman-era Balkans. Recently, the remains of the small 'mansion' were located alongside the 'fountain of Baba', in the highland plateaus of Zagori, following an extensive archaeological survey. This endeavour was followed by ethnographic investigations into two different ethnolocal groups of Zagori: the last Sarakatsani pastoralists residing in the mountain and the Kostas Lazaridis Zagorisan archive.

This contribution places the 'mansion' and its surrounding landscape at the core, considering it as a factor uniting textual and ethnographic evidence, assisting in the investigation of the material traces of the other.

9 THE PERMEABILITY OF THE BOUNDARIES: THE ARCHAEOLOGY OF THE ANATOLIAN BEKTASHI-ALEVI ISLAM

Abstract author(s): Dikkaya, Fahri (TED University)

Abstract format: Oral

The Bektashi-Alevi tradition in Anatolia is unique in its unusually heterodox character. In fact, Bektashi-Alevi contexts are identified often through the co-presence of Anatolian and Central Asian shamanistic symbols along with local Christian iconography within the context of Anatolian Islam. This heterodox relationship that emerged in the 13th century still preserves its exclusive and connective nature in our common era. Elements from different systems of belief come to light in the material culture within the same physical space of Bektashi-Alevi contexts. These contexts vary in nature. While some are built environments of worship, others are burial shrines (türbe). Natural, historical and even archaeological contexts were used and reused as places of worship. This continuity exists similarly in a wide range of areas, from Cappadocia to Konya in central Anatolia and even to Uşak in western Turkey. This paper will focus on this particular heterodoxy in its unique Islamic context highlighted by the remains of material culture, architecture and places for worship in both built environments and in nature. An archaeological survey will greatly contribute to our understanding of current state of Islam in Anatolia, which is in fact far from homogenous.

10 ISLAM IN THE “LAND OF DARKNESS”: NOMADIC COSMOPOLITANISM IN THE NORTHERN CASPIAN REGION (10TH CENTURY)

Abstract author(s): Shingiray, Irina (University of Oxford)

Abstract format: Oral

By the 10th century, Islam was spreading among the inhabitants of the North Caspian Lowland, and further north, among the Khazar, the Oghuz, the Bulghar nomads and other people of the steppe and forest-steppe regions. Under the influence of Islam, sacred and popular Islamic geography and lore were also transplanted to those northern territories—often known as the “Land of Darkness.” Their inhabitants adopted Islamic beliefs and practices on their own terms based on their own interpretations of the religion—the ways more suited to mobile nomadic lifestyles. The nomads’ outlook on Islam often provoked derogatory comments among the traditionalist literati from the Islamic heartlands, who either refused to accept nomads as Muslims (calling them polytheists) or denigrated them as being people of extremism, innovations, and infirm believers. Few extant written records mention nomadic Islam, and those that do are rife with such prejudices. Thus, archaeology plays a paramount role in understanding nomadic Islam in the Caspian Steppe; it often presents the sole path to uncovering individual and collective Muslim lives (and deaths) as they can be reconstructed from material remains of that time period from the distant northern frontier of Islam. This paper explores the nature of nomadic Islam by weaving together narratives and material culture derived from burials, landscape studies, personal objects, and materials of exchange. The paper also focuses on issues of nomadic contestation and cosmopolitanism with regard to Islamic views and practices in the Northern Caspian region and their long-term influences on the rest of the Islamic world.

11 CULTURAL CODE OF THE MAUSOLEUM OF JOCHI KHAN IN CENTRAL KAZAKHSTAN

Abstract author(s): Usmanova, Emma (Buketov Karaganda State University) - Panyushkina, Irina (Laboratory of Tree-Ring Research, University of Arizona) - Uskenbay, Kanat («Institute for Humanitarian Studies ABDI» LLP) - Kozha, Mukhtar (Scientific Research Institute of Archeology of the International Kazakh-Turkish University H.A. Yasavi) - Gyul, Elmira (The Fine Arts Institute of Academy of Sciences of Republic of Uzbekistan)

Abstract format: Oral

The mausoleum as a burial complex is a cultural phenomenon that communicates in time. Its existence demonstrates the emerging priorities of the religious behavior of the Golden Horde population entering the Islamic culture. This monument contains rituals and material signs-symbols denoting the collective memory and behavior of the people of past societies. Folklore designates the mausoleum as the burial place of Jochi, the eldest son of Genghis Khan, who died in 1225. In 1946, archaeological excavation of the mausoleum uncovered two burials completed with clay slabs and wooden boxes. Grave goods, human and animal bones were disturbed by robbers. 14C dating of wood collected from the mausoleum building outlined two construction phases in the late-13th and mid-14th centuries. 14C date of burial-1 plank (mid-13th century) happened to be older than the building, yet after Jochi’s death. The mausoleum architecture depicts the iconic code of Islam. Yet architectural features such as the double dome, 17-ray star-shaped drum, blue glaze of tiles, green ceramic pommel with shaped bull horns, white ganch on interior bricks are unique in Central Kazakhstan. The blue-green-white color code known in pre-Islamic culture became the main code in the architecture of Islam, its „typescript“. We contemplate that the blue dome with a green pommel is manifesting the status of the buried person: a bearer of Islam among nomads and a descendant of Jochi. Beside that the mausoleum includes the elements of pre-Islamic code. Animal bones, a camel skull from the burials, and the symbol of the bull horns reflect the pre-Islamic outlook. This is the code of collective memory for the mausoleum built in the pre-Islamic landscape of the Great Steppe. Therefore, the cultural code of the mausoleum manifests an amalgam of the pre-Islamic and Islamic religious traits of the Golden Horde population who embraced Islam.

12 THE ROLE OF KHANQAH ARCHAEOLOGY IN THE STUDY OF KHALWATIYYA SUFI CENTERS IN AZERBAIJAN

Abstract author(s): Khalilli, Fariz (The Institute of Archaeology, Ethnography and Anthropology of Azerbaijan National Academy of Sciences)

Abstract format: Oral

Khanqah archaeology is one of the important directions of Islamic archaeology. A large number of Sufi khanqahs in the world and in Azerbaijan have been destroyed and turned into ruins due to the influence of natural and human factors. During the Soviet period, the communist regime in Azerbaijan created atheist societies and destroyed most religious monuments. Although these acts of vandalism hurt the Islamic heritage, the number of believers increased precisely because of the conversion of such destroyed khanqahs into sacred places.

Our expedition, which is currently engaged in Khanqah archaeology under the guidance of Prof. Dr. Gafar Jabiyev, identifies the remains of hermitage houses and carries out excavations there. Research was conducted in 2013–2014

in Shikhmazid Khanqah (Aghsu city), in 2018 around the tomb of Sheikh Dursun (Aghsu city), in 2019–2021 in Sheikh Mohammad Khanqah (Basgal settlement), in 2020 in the tomb of Pir Omar Avakhili Shirvani, the founder of the Khalwatiyya sect (Avakhil village, Shamakhi region), and in the Kelekhana tomb complex (Kelekhana village, Shamakhi region) in 2022.

As a result of the archaeological excavations conducted in the remains of khanqahs, a large number of material and cultural samples related to the creation, formation, and spread of the Khalwatiyya sect have been revealed. The obtained examples allow to conduct a comparative study with Khalwatiyya centers in different parts of the world and to present new objects of religious tourism.

In this lecture, the latest scientific results of Khanqah archaeology in Azerbaijan, their generalizations, and comparative analyses will be discussed.

331 THE EXPERIENCE OF STONE: MATERIALITY, LANDSCAPE, EXPRESSION

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: D'Alisera, Alexander (Boston College) - Cowart-Smith, Christina (Durham University)

Session format: Regular session

Stone is a durable, lasting medium. Even in its fragmentation, it exudes permanence, solidity, and symbolism. For millennia, humans have shaped stone, fashioning it into architectural wonders, sculptured monuments, objects of lived religion, and things of everyday use. At the same time, natural stonescapes, from caves and mountains to canyons and valleys, have played indisputable roles in the shaping of human experience and expression. Natural and hewn stone has long been used, reused, repurposed, and recycled in myriad contexts, at local, regional, and global levels. To this end, this session explores human relationships to stone from both historical and archaeological perspectives. It invites scholars of all time periods and geographies, but especially those working from the prehistoric to the medieval periods, to contribute papers exploring the experience of stone. Possible subjects include, but are not limited to: stone and the landscape; a phenomenology of stone; agentive stone; stone and lived religion; the theology of stone; the materiality of stone; the reuse of hewn or sculptured stone; the relationship of stone artifacts to ecofacts; stone and memory; or, shaping stone into space. Above all else, this session seeks to open a dialogue between eras, disciplines, methodologies, and geographies, with the particular aim of bringing archaeologists and historians into further conversation with one another.

ABSTRACTS

1 STONE-COVERED HILLOCKS AND STONES AS BEARERS OF MEANING IN PREHISTORIC WORLDVIEWS

Abstract author(s): Lönn, Marianne (Retired)

Abstract format: Oral

In my research on what we call stone-covered hillocks I have come to wonder if not stone in itself - stones, blocks, hillocks - are bearers of meaning in at least some prehistoric worldviews.

On the Swedish west coast there are some strange monuments, hillocks clad in stones and sometimes blocks. Every crevice, every depression is filled with stones and around some of the hillocks is a brim of stones. These constructions can be of considerable size, the largest is 60x40 meters including the brim. It seems like people has remodeled the hillock and made it smoother and rounder. On this hillock and stone-packing are graves, a house-foundation, heaps of fire-cracked stones, hearths, postholes, possible votive sites and some more. At the highest part of the hillock a grave-like cairn is built. There are no traces of a burial though, just a depression filled with sand, earth and stones made into a top. Among the stones in the packing are different finds, mostly flint and ceramics. This construction has been in use from around 1000 BC to AD 500, i.e., 1500 years. There are all together nine sites like this in the area of investigation, all looking different but all having manmade stone-packings on or at a hillock or mountainside in common. The stone-clad hillocks are interpreted as cultic sites even though some of them look like cemeteries.

In the area of investigation there are also graves, cairns, built in the same way but on higher mountains. Often all crevices around the grave are filled with stones.

The easy access to stones in the area might explain the common use of stones, but it does not explain the way these constructions are formed.

2 BEHAVIOURAL PATTERNS OF FLINT PROCUREMENT IN SOUTH-EASTERN ITALY DURING LATE PREHISTORY

Abstract author(s): Vilmercati, Melissa (Sapienza - University of Rome)

Abstract format: Oral

South-Eastern Italy is a pivotal case-study for the understanding of lithic procurement during Late Prehistory, due to the presence of high quality flint sources, among which stands out the one of the Gargano Promontory. This latter geological formation is located in Apulia and, together with the Tavoliere plain, characterise the northern area of the region. Since its high quality, Gargano flint circulated throughout Southern and Central Italy and on the opposite side of the Adriatic. Prehistoric human groups exploited this flint source through the excavation of at least twenty mining sites from the Early Neolithic to the Early Bronze Age. Starting from this latter period, a significant change in the raw material procurement strategies occurred: the mines were not active anymore, so flint wasn't collected by quarrying, but picked up in secondary deposits.

This presentation aims at reconstructing the phenomenon of flint procurement in South-Eastern Italy by taking into account a specific case-study: the North-Eastern Apulia region, encompassing the Gargano promontory and the Tavoliere plain. The study will be carried out in a diachronic perspective to overview the changes in flint procurement strategies between the Neolithic (6th mill. BC) and the Bronze Age (2nd mill. BC). The main questions to be answered are: what was the relationship between human groups living at a close range from the Promontory and its flint sources? How this interaction affected both the economic strategies of the communities and the Gargano stones-cape? How this relationship changed through time with the emerging of new materials and technologies?

The main objective of this paper is to highlight the importance of the study of stone raw material in archaeological contexts for a global reconstruction of the behavioural patterns of past societies.

3 SACRED STONES IN THE NEGEV AND SINAI DESERT: THE BIBLICAL MAŞŞEBOTH

Abstract author(s): Avner, Uzi (The Dead Sea-Arava Science Center and The Negev Rock Art Center)

Abstract format: Oral

The Negev and Sinai deserts are extremely rich with prehistoric and later cult sites. Hundreds of them, of various types, are presently recorded, including over 450 shrines with standing stones (maşşeboth); 20 shrines have been excavated.

The desert maşşeboth are natural, unshaped stones of various sizes, set up as singles or in groups of repeating numbers (2, 3, 5, 7, 9 and groups of many). They first appeared ca. 11000 BC, they became prevalent from ca. 7000 BC, while in the fertile lands of the Near East they became common only after 2000 BC. Two principle types of maşşeboth can be distinguished, based on the stones' setting (numbers in groups, relative sizes and proportions), on written sources and anthropological studies. One represented deities, another- the ancestors. Study of the maşşeboth illuminates four main points:

1. The desert maşşeboth present a specific theology, avoiding figurative representation of the gods. This principle is eloquently worded later in the Bible (Exodus 20:21).
2. The repeating numbers of maşşeboth groups are directly paralleled by numbers of deities in groups across the ancient NE, as known from figurative art and from texts. Therefore, it is suggested that the desert maşşeboth represented a complex and hierarchic pantheon, as early as the 7000 BC, while in the fertile zones a complex pantheon appeared much later.
3. Maşşeboth were originally a desert cultural element, that later spread to the fertile NE. This implies that the desert people, although inferior in material culture, had the power to influence the peoples of the sown-lands in the spiritual sphere.
4. The Bible often condemns the cult of maşşeboth in Iron Age Israel. However, a careful examination of the biblical texts, inscriptions and archaeological remains, demonstrates that they were actually common, and even represented the Israelite deities, Yhwh and Asherah.

4 READING PICTISH STONES AS THEOLOGICAL SYMBOLS: SYMBOL FREQUENCIES ON CROSS STONES AND CHRISTIAN USES OF PICTISH SYMBOLS

Abstract author(s): Osborn, Sam (Boston University)

Abstract format: Oral

Among the fifty to sixty distinct ideograms carved on over 300 Pictish stones and stone fragments, the cross is the third most common symbol. The cross – of obvious Christian theological significance – tends to be underemphasized in Pictish symbol analysis because it is neither regionally unique, nor does it excite the same mysteries of untranslatability that the other ideograms present. This paper argues that the near-ubiquity of the cross in the Pictish symbolic

lexicon allows us to position the other symbols, and their interpretation, in a distinctly theological context. Comparisons of symbol frequencies on Pictish stones show that the ideograms were not only compatible with Christian religious artwork, but also descriptive of unique modes of material religious authority during and after the Christianization of the Picts. Furthermore, rates of use on stones with and without Christian iconography show that there is little adjustment in ideogram information as these symbols are appropriated by artists newly engaging with Christian imagery. Far from being regional accessories to Christian iconography, these symbols, and the mysterious information they contain, should be read as participating in the distinct theologies of their context.

5 THEOLOGY, STONE, ROCK AND RELIGIOUS PRACTICE IN THE ROCK MONASTERY OF ST PEDRO DE ROCAS. HIEROPHANY OF A NATURAL LANDSCAPE

Abstract author(s): Figueiras Pimetel, Natalia (Universidad Complutense de Madrid) - López Quiroga, Jorge (Universidad Autónoma de Madrid)

Abstract format: Oral

The monasteries of the first Christian communities, notably the hermitage sites, established an indissoluble relationship between mountain and ascetic life, rock and worship, nature and religious practice, stone and death, the interior of the rock and the idea of the Resurrection. From the time of the Essenes, in the caves of the Judean Desert, to the sites of monasteries such as Sinai, we find a complex and broad symbolic meaning that sinks its roots in the first Hebrew communities and the Judeo-Christian tradition, acquiring a series of meanings derived from contemporary theological approaches and religious practice associated with these natural elements. The rock and the mountain are materials that confirm the strictest theophany and show the hierophanic reality of what they represent as a manifestation of the sacred. In the northwest of the Iberian Peninsula is located the rupestrian monastic complex of St Pedro de Rocas, a hermitage from the 6th century that maintained the practice of anchoretic life until the Modern Age. The settlement of the first hermit monks is determined by the unique landscape existing in the surrounding mountain systems. Its topography, morphological characteristics and the monumentality of the granitic ridges showed an evocative appearance and similar to the sacred mountains described in the Old Testament, as well as to the places of origin of the first hermits in the form of slender and conical peaks. This mountainous complex is located very close to Via XVIII of the Antonino Itinerary, allowing accessibility to this rocky landscape, something that was maintained throughout Late Antiquity and the Middle Ages. The hermits established in this place a direct relationship between the natural landscape and its transformation, forming the rock at the same time a space for habitation, worship and prayer. A perfect symbiosis between matter (the rock), theology, death and resurrection

6 LIVING WITH STONE AT VIGGBYHOLM

Abstract author(s): McGinnis, Meghan (Stockholm University)

Abstract format: Oral

In the summer of 2020 contract excavations at the site of Viggbyholm, in Täby parish north of Stockholm, brought to light the remains of an ancient settlement located on what had once been a wooded height overlooking a cove of the Baltic Sea. A settlement consisting of a sizeable farmstead, encompassing an array of dwellings, outbuildings, and workshop areas which had evolved and expanded from the time of the first signs of habitation in the Migration Period until the site was finally abandoned at some point during the Viking Age. The buildings, artifacts, and ecofacts uncovered at Viggbyholm provide a wealth of information for any archaeologist interested in investigating any number of aspects of the lived experiences of the people who resided and worked there over the course of these several hundred years of activity. In this paper, I will concentrate on discussing just one of these -- how varied experiences of stone clearly formed an enduring, important, but also everyday part of the landscape of lived religion at this late Scandinavian Iron Age settlement. In particular, I will be exploring both the differences and striking similarities evidenced in a series of contemporaneous ritual practices centered on a constructed stone altar (or harg) at the center of the settlement, and a natural stone mountain at its edge. And in turn what these practices reveal about relational interactions weaving together stone, metal, and human bodies, the connections between 'Norse' and 'Saami' practice, and the centrality of special stone places as a facet of late Iron Age lived religions deserving of more scholarly attention.

7 DEER, STONE, AND DEATH-LIFE SIMULTANEITY AT EARLY MEDIEVAL DOG HOLE CAVE

Abstract author(s): D'Alisera, Alexander (Boston College)

Abstract format: Oral

Dog Hole, a vertical cave in Cumbria, contains extensive archaeological evidence for human use from at least the late Iron Age to the medieval period. The Romano-British layers—containing myriad adult, neonate, and fetal burials alongside animals and extensive material culture—have drawn the most recent scholarly focus. However, the cave also contains evidence for early medieval human presence, including deer antlers that have been radiocarbon dated between 881 and 1013 CE. These deer antlers were discovered atop the late Romano-British burial site in the cave's

main chamber, and the implications of this early medieval deposition remain profoundly underexplored. I thus begin this paper by contextualizing deer antlers within the broader lifeways of early medieval Britain. Drawing upon evidence from both the material and literary records, I argue that deer antlers carried connotations of death-life simultaneity and liminal guardianship, making them ideal ritual objects to place among the stones of an ancient burial site. I conclude that, like Sculptor's Cave in Scotland, Dog Hole's dangerous geomorphology and remote location would have played a significant role in the cave's attraction as a locus of ritual behavior well into the middle ages. By exploring this early medieval deer antler deposition in its archeological, historical, environmental, and phenomenological context, I seek to demonstrate new ways in which scholars may explore underground ritual practice in times and places often considered inaccessible by single-discipline approaches.

8 STONES FOR THE DEAD: VARIETIES OF RELIGIOUS EXPERIENCE IN THE DEATH RITUALS OF EARLY MEDIEVAL ENGLAND

Abstract author(s): Mason, Austin (Carleton College)

Abstract format: Oral

Stones have a strong association with death in many religious traditions, from the rock-cut tombs of the ancient Mediterranean down to modern-day rituals of erecting Christian headstones or leaving visitation stones on Jewish graves. Early medieval England was no exception, even if the religious symbolism of the use of stones in funerary rites can be harder to decipher, since 'mundane' stones have only recently been deemed important enough to warrant detailed analysis in archaeological reports. Where we have good data for the use of stones in burial, it is increasingly clear that people across Britain often chose them carefully and placed them in graves with deliberate intent, whether in sub-Roman or newly converted Christian areas or in communities that followed Celtic or Germanic pagan practices in the chaotic centuries after Roman authority in Britain collapsed c. 410 CE. That purposeful choices lay behind the burial of stones can be inferred from patterns in their placement at several scales, from the regional (in the similarity of practices between different cemeteries), to the local (in their regular distribution within any given cemetery), to the personal (the positioning of stones in relation to individual bodies). Stones incorporated into the death rituals of early medieval England fall into three main categories: 1) structural features used to line the grave before the body was interred, 2) slabs and cairns used to mark the grave after burial, and 3) stones and pebbles placed in close proximity to the deceased, whether over, under, or beside the body. Examining the material makeup and structured positioning of these objects reveals that our inclination to dismiss them as ordinary belies the significance that they encoded in the funerary rite for those who chose to bury with them, and allows us to begin to unpack the symbolic grammar of stone burial.

9 ANCHORING THE PERIPHERAL: STONE AND THE FRONTIER LANDSCAPE OF THE FIFTH TO EIGHTH CENTURY Lothians, SCOTLAND

Abstract author(s): Wiley, Trevor (Boston College)

Abstract format: Oral

The frontier is often conceptualized as mutable, a zone of hybridity and innovation. However, amidst the traditional historical interpretations of the comings and goings of triumphant armies, the landscape has maintained a deeply-written record of human activity, of memory and reuse. At the heart of such landscapes lay stones, which anchor place, invoke memory, and channel movement: Neolithic standing stones, long-cist stone linings, ruined Roman forts and medieval carved monuments. The interaction between human and stone within the frontier forces us to confront the meeting of the timeless and the ephemeral, as people attach new and negotiated meaning to ancient geological reality. This paper explores a case study region along the Firth of Forth to think about how stone – primordial, prehistoric, and contemporary – shaped human interaction with the landscape in the frontier north across several centuries.

The early medieval Lothians, often examined through historical analysis as a zone of raid and conquest dominated by broadly-defined Britons, Bernicians, and Picts, have seen recent fruitful analyses which consider post-colonial material frameworks. Such methodologies, which prioritize questions of adaptation and complex identity, have the potential to restore agency to the peoples who lived along the early medieval Forth. This paper turns these questions toward the broad stone corpus of the Lothians, and explores how such ancient geological artifacts were viewed, carved, moved and buried to express peripherality and centrality in an ever-changing world. Ultimately, I argue that the changing use of various types of stone within this period can give us a glimpse into changing concepts of the Lothians' peripherality in the crucial period between the decline of Roman military frontiers and the advent of the Bernician and Verturian kingdoms of the early medieval.

10 **DIVORCED FROM THE LANDSCAPE: COLLECTIONS OF EX SITU EARLY MEDIEVAL CARVED STONE AND THE RECONSTRUCTION OF POTENTIAL SEEN CONTEXTS**

Abstract author(s): Stoner, Heidi (Canterbury Christ Church University)

Abstract format: Oral

The study of individual monuments versus groups of monuments in the early medieval insular world is fraught when considering the way in which much of the early medieval sculpture is found and displayed today. Sculpture can be found, fragmented, through excavation or built into later churches as either spolia or recycled material. A vast majority of the sculpture is thus found ex situ, these sculptures have been moved, damaged or destroyed, and the sites that likely housed these objects or provided their backdrop have been rebuilt and the landscapes that they might have inhabited have completely changed. Sites that have multiple pieces of sculpture present unique research questions into the viewed context. Were these sculptures displayed together, at what point and how does this landscape of multiple objects at a single site inform how these monuments interact with one and other. This paper will address the seen context of these monuments looking at locations where multiple sculptures might have co-existed within the same viewing experience rather than defining individual objects outside of their immediate context. Moreover, it will address how we study suits of sculpture at sites with a lost context and explore the potential for reconstructing seen context and landscape contexts in the early medieval insular world through an interdisciplinary approach.

11 **TO COME ACROSS A CROSS: CONSIDERING THE SOCIAL AND PHENOMENOLOGICAL IMPLICATIONS OF BRITAIN'S 'HIGH' CROSSES IN LANDSCAPE CONTEXTS**

Abstract author(s): Smith, Christina (Durham University)

Abstract format: Oral

In early medieval Britain, carved stone crosses were found in a variety of environments. Incised crosses were pecked onto natural boulders. Cruciform stones were shaped from blocks of rock. Relief crosses were fashioned onto large upright hewn slabs or carved onto the face of smaller recumbent monuments. These stone crosses played counterpoint to a variety of crosses in other media: cross-carpet folia in manuscripts, processional crosses of wood or metal, and pectoral crosses worn to the grave, to name but a few cross-objects. In the eighth-century, however, the carved stone cross in Britain took on an innovative new form: the 'high' cross. These free-standing, monumental, cruciform stone sculptures—that is, stone crosses in the round—would be erected by communities across the island for the next 500 years.

This paper engages with those fragments in the British 'high' cross corpus which have, or might reasonably have had, landscape findspots. It establishes a data set of such monuments through cross-disciplinary means, relying not just on archaeological data but also historical (textual) and place-name evidence. Cross-bases still in situ in the landscape, as well as fragments which do not come from sculpture assemblages, are particularly considered. From here, the distribution of 'high' crosses in landscape contexts is discussed with an eye to both its chronological and socio-political implications. The paper ends with a selection of case-studies exploring the phenomenological impact of 'high' crosses in a landscape setting.

12 **THE CULT OF HERCULES IN THE CONTEXT OF STONEMASONRY IN ROMAN DALMATIA**

Abstract author(s): Banovac, Ivana (Archaeological museum of Split) - Jadrić-Kučan, Ivana (University of Zadar)

Abstract format: Oral

The cult of Hercules (Heracles) has been worshiped in Croatia since the time of the Greek colonization of the Adriatic coast, as evidenced by archaeological data such as reliefs, altars, inscriptions, statues, etc. During Roman rule, the worship of Hercules increased rapidly, and the main bearers of his cult were Roman soldiers, stonemasons, and workers in quarries. His figure was very often associated with stone carving, which is why we find a large number of finds dedicated to that deity inside the quarries. Namely, Hercules was the most famous mythological hero, the personification of physical strength and endurance, which is why he was considered a kind of protector of stonemasons whose hard work of quarrying and processing stone required the same qualities. Since the Roman soldiers were in charge of overseeing construction and masonry projects, they, apart from the workers, were among those who worshiped him and erected shrines and monuments to him. Monuments of such character in the context of stone carving were found in quarries in Trogir, Salona, and Brač.

13

RECYCLING COLOUR. LAPIDARY PRODUCTION AMONG THE DIAGUITAS FROM NORTH-CENTRAL CHILE (1200-1540 CE)

Abstract author(s): Armstrong, Felipe (Museo Chileno de Arte Precolombino; Universidad Alberto Hurtado; FONDECYT 11221116) - González, Rolando (FONDECYT 11221116)

Abstract format: Oral

During the Late Intermediate Period in North-Central Chile, we have evidence for the emerge of a fully agricultural society, the Diaguitas. These communities have been characterized in detail by previous research, offering information about their economic, social and even political developments, up until the Spanish conquest, and considering their previous incorporation into de Tawantinsuyu or Inca empire.

Despite all the research within this period and for the Diaguita material production (mainly their strikingly decorated pottery), little has been said about their lapidary production. The use of different kinds of stone for the production of body ornaments mainly in the form of beads and pendants has been recorded but not studied, as well as the use of similar stones for producing elaborated spindle whorls. Based on the study of these objects, we can argue that colour was one of the attributes looked after in these stones, but more interestingly, we found evidence of reuse and recycle of stone objects. Some of them seem to have been used by previous populations inhabiting this region prior to the Diaguitas, in the manner of labrets, which were later transformed into beads or pendants.

In this paper we aim at discussing how stone and stone objects presented themselves with specific affordances that made it necessary for the Diaguita to recycle and repair them, considering that they lived in a highly mineral region, with a wide diversity of stone relatively easy to access. Stone, we argue, was one way in which the Diaguita brought colour and memory to their own bodies.

14

POWER AND CONSTRUCTION: ASHLAR MASONRY IN EARLY MEDIEVAL ARCHITECTURE IN THE EBRO BASIN (7TH-10TH CENTURIES)

Abstract author(s): Mias, Nicolas (UPV-EHU)

Abstract format: Oral

The aim of my thesis is to make a social history of power through architecture and building techniques using the Ebro basin in the Early Middle Ages (7th-10th centuries) as a case study. The starting hypothesis is that there is a correlation between the sophistication of building techniques and resources and the different morphologies of local and central powers. For this reason, the aim is to analyse large ashlar architecture in certain urban and rural contexts from a perspective that values forms of social ostentation, production systems and the social value attributed to the different constructions. The specific objectives will be (1) to identify a corpus of buildings relevant to the study of early medieval building techniques; (2) to carry out a detailed and analytical archaeological study using new dating techniques, such as OSL; (3) to analyse the architectural phenomenon from the perspective of operational chains; (4) to study this manifestation of central and local power from the point of view of social history. The interest of this study lies in the fact that the Ebro Valley was a frontier territory between the Andalusian State and feudal political formations during these centuries, where conditions were created for political experimentation and the use of a language of domination that found its maximum expression in architecture. Furthermore, the aim is to compare the use of a prestige architecture made with complex techniques with other territories of the Iberian Peninsula and the Maghreb.

15

A MONUMENT CONSTRUCTED IN STONE FOR ETERNITY: THE SO-CALLED TEMPLES OF "MILLIONS OF YEARS" OF THE EGYPTIAN NEW KINGDOM

Abstract author(s): Chapon, Linda (Équipe Égypte Nilotique et Méditerranéenne - ASM – UMR 5140, University Paul-Valéry Montpellier 3)

Abstract format: Oral

Ancient Egypt is the paradigmatic example of relationship of past societies with stone as a material expressing permanence and solidity. Kind of stone, colour and provenance of the quarry played a key role in the symbolic, ideological, practical and political use of stone. Monumental architecture in stone increase particularly from the beginning of the New Kingdom (ca. 1539-1075 B.C.), when the so-called temples of "millions of years" developed. In this sense, the name of these monuments conveys altogether their materiality, their ideological background and the way they were conceived and perceived. Numerous New Kingdom examples of inscriptions refer to kings having constructed cultic buildings with durable stone to last for eternity.

Furthermore, in Ancient Egypt, natural stonescapes and man-made monuments made of stone combined to create a unique relationship between humans and stone through the prism of religious and ideological concepts. Particularly well explored is the Theban landscape which specific east-west orientation governed monuments and ritual processes. In western Thebes, the stone pyramid was an important geographic and theological reference. During the New

Kingdom, conceptions surrounding the Theban landscape was combined with an inherited use since the Old Kingdom of a conceptual landscape, from real man-made stone pyramids of the Old Kingdom (ca. 2700-2200 B.C.) and Middle Kingdom to the Theban natural pyramid which integrate stone monuments, and in particular tombs and temples of “millions of years”.

We will focus as case study on Western Thebes, exploring how the development of temples of “millions of years” there (but also elsewhere) may have responded to a renewed model and understanding of monumentality, stone and memory. Here the exploration should be two folded: how kingship by means of architecture, decorative programs and statuary made of stone conceived itself and how society perceived or received this monumentality and hence royal performance and memory.

16 **A NATURAL AND ARTIFICIAL SEASCAPE: MATERIALITY AND PHENOMENOLOGY OF COASTAL VOLCANIC ROCKS**

Abstract author(s): Marangou, Christina (Archaeologist)

Abstract format: Oral

In the Northern Aegean Sea, on the western coast of Lemnos island, the Kastro headland has been occupied at least since prehistory, during antiquity and in Medieval till modern times. Besides some impressive natural features and still preserved petroglyphs, volcanic rocks of the peninsula have been hewn into different spaces. According to current research, vestiges still preserved in various sectors and altitudes, as well as surface and subsurface mobile finds, indicate that early human presence in large parts of the seascape would date from the Bronze Age, the Iron Age and the main periods of antiquity. Moreover, the maritime character of this rock-cut seascape is obvious by its geographical location and implied by some carved features, as well as by a number of mobile finds.

It can be presumed that, at the outset, the materiality of rocks as natural forms perceived within the landscape led to their selection, enhancing and shaping them into human spaces, thus modifying the observers' view and relationship to their transformed surroundings. At the same time, utilitarian objectives of some spaces are not always obvious, relative evidence possibly suggesting symbolic patterns, sometimes either attested in other regions, or testified by ancient written sources. It seems meaningful that outstanding rocks on the island also bore significance in much later periods, including in the recent past.

In the framework of an anthropological approach of the archaeology of both natural and anthropogenic places, the paper will consider possible concrete and symbolic/ritual human behaviours and processes within the Kastro rocky spaces and seascape.

17 **CONSTRUCTING MUSAWWARAT ES-SUFRA (SUDAN): THE EXPERIENCE OF STONE FROM MONUMENTAL CEREMONIAL ARCHITECTURE TO EXTRAORDINARY AND EVERYDAY OBJECTS**

Abstract author(s): Kleinitz, Cornelia (Deutsches Archäologisches Institut, KAAK)

Abstract format: Oral

This contribution addresses the experience of stone at Musawwarat es-Sufra (Sudan), a circular valley surrounded by low table mountains, which was once a major ceremonial centre of the ancient Kingdom of Kush. Various facets of using and experiencing stone are currently investigated as part of a multi-sensory study of (indigenous) cult at Musawwarat. Here, the first known (stone-built) temple dedicated to the local gods of the hinterland of the Nile is found as well as the unique, labyrinth-like, building complex of the Great Enclosure. The landscape of the valley was partially shaped by quarrying the sandstone that was used in the numerous monumental structures at the site. The buildings were either decorated with reliefs and architectural sculpture or served as canvases for incised textual and pictorial graffiti. Sandstone was also used for the construction of offering places and the manufacture of offerings, such as figurines. Apart from contemporary worked stone, naturally occurring stone nodules, strangely shaped stones and petrified wood were deposited at offering places together with prehistoric artefacts, such as polished stone axes or 'stone rings'. In contrast to these extraordinary items in temple contexts, a broad range of grinding and crushing tools in the valley of Musawwarat points to the day-to-day lives of local pastoralists. These stone objects are among the few material traces of local pastoralist populations, whose wood-based mobile architecture left little trace in the archaeological record. Current research in collaboration with today's local community at Musawwarat explores the use of stone by pastoralists, allowing us to form a fuller picture of the role(s) of stone in the lives of the people of Musawwarat over time.

18 'SEEING IS BELIEVING' ON THE MOURNE GRANITE DOWNPATRICK HIGH CROSS

Abstract author(s): KING, Michael (Independent)

Abstract format: Oral

Close study of the late 9th/early 10th century Mourne granite Downpatrick High Cross, prior to its conservation and move inside the neighbouring Down County Museum for long-term preservation, resulted in a comprehensive re-evaluation of its scheme of figural carving, and a holistic interpretation of the iconography of the cross, which demonstrates a sophisticated theological plan behind its design and carving. While the east side reveals an abbreviated history of Redemption from the Fall to the Last Judgement, the west side presents five scenes, each with Christ represented centrally, and including six examples of Him being literally recognised, or spiritually seen for who He is, challenging the viewer also to recognise Christ in a similar fashion in order to achieve salvation. The viewer is also challenged to recognise, in the hard and apparently 'eternal' G2 (56 million-year-old) Mourne granite sparkling with quartz inclusions, a radiant jewelled cross, imitating the cross set up by the Emperor Theodosius II in Jerusalem in 418 AD, and as described in the poem 'The Dream of the Rood'. Viewers could also see meaning in the original orientation of the cross, and the heavenward direction of its biblical narratives on both east and west sides. Finally, we, as modern viewers, can gain an insight into how the community saw the stone cross, as encompassing their vision of the history of salvation, through a record of a coffin being processed around the cross prior to Christian burial in the year 1617, a custom still seen to occur around the High Cross at Arboe in the present day.

19 LIFECYCLE OF STONE(S) - ON THE REUSE OF HEWN STONES AS MARKERS OF REMEMBRANCE IN CLASSICAL ANTIQUITY

Abstract author(s): Schwake, Florian (ROOTS - Cluster of Excellence; Christian-Albrechts University Kiel)

Abstract format: Oral

A societies memory and identity are intimately connected with certain sites, objects and places. With his work in the 1980s and 1990s, picking up the torch on collective memory from Maurice Halbwachs, Pierre Nora introduced the notion of *Lieu de mémoire*. This can equally apply to individual components of buildings which may receive a new semantic meaning and change of function by becoming *spolia* in secondary (re-)use. Thus, they can be testimony to the transition or continuity of societies and their identities, thereby functioning as markers and symbols of remembrance. In combining written evidence - inscriptions and literary sources - with the substantial archaeological record this paper aims to examine the visible transformation of the cultural and material environment in Classical Antiquity with a focus on Greece in the Classical and Hellenistic period. Prior to Late Antiquity, the reuse, repurposing, and recycling of hewn stone is scarcely studied and often attributed to purely economic factors. This demands a closer look: Were stones reworked to fulfill a new function or simply translocated? Were architectural pieces (re-)used in different later phases as markers of remembrance or merely used as invisible and unrecognizable elements. If and how might they have been perceived or experienced? These questions will be tackled by presenting two case studies from my PhD project Reuse and Spoliation in Greek Sanctuaries from the 5th to the 2nd century BCE.

20 A TALE OF STONE REMOVAL

Abstract author(s): Cantoni, Maria (University of Birmingham)

Abstract format: Oral

The purpose of this paper is to bring together archeologists, religious scholars, and social scientists to consider stones in their many facets through the common practice of walkscales. My case study on the Apuan Alps aims to highlight the stories stones have traversed: from Bronze Age cave carvings to marble debris, from sacred peaks to extraction sites.

The Apuan Alps are made of marble; the white precious stone that built ancient Rome, the stone carved by Michelangelo and Donatello. The quarries are now anthropocene symbols, revealing ecological disasters and our role on Earth. The auto-ethnographic research is achieved through walking because it is the most effective and direct way of getting out of a motionless postcard scenario, and into a dynamic and complex whole, and photography delimits a piece of land through framing and composition, revealing common patterns among stones and mountains.

Walking functions as a boundary object that allows different actors to discuss the relationships between the interzones in contemporary topographies; between archeological sites and surrounding environment, or the interactions among hikers, pilgrims, and quarry workers. Focusing on walking allows us to understand the liminality between what is found, what is yet to be found, and what is actually there, opening an array of questions. By taking the steps that retrace all the steps that led from sacred monoliths and to contemporary working quarries, we try to decolonize the gaze and can focus on liminality - the intermediate zones as perceptual phenomena of an embodied topography -

21 I SPEAK RUINS. ON MEDIEVAL SCULPTURE AND PERSONAL NARRATIVE

Abstract author(s): Woodcock, Alex (Independent)

Abstract format: Oral

How can we write about the experience of working stone and the sculpture and architecture of the past in an engaging and accessible way? Following my PhD on medieval sculpture I trained as a stonemason and worked at Exeter Cathedral in Devon, England, for six years. It was a jump into a highly practical life that forced me to reassess everything I had studied up to that point. My new perspective as a practitioner put me in an interesting position and I wanted to try and communicate how medieval art, specifically Romanesque sculpture, had led me here.

In 2019 my book *King of Dust: Adventures in Forgotten Sculpture* was published. This wove the history of Romanesque in the southwest of England around my experiences learning to become a stonemason and was my attempt to write a personal, narrative-based, creative non-fiction account of the work that had motivated me for years. In this talk I will explore how I went about writing the book and the challenges of being in your work, as well as the impact that it had, both on me as a writer and on how it was received.

22 SENSORY PERCEPTIONS OF MEGALITHS IN THEIR LANDSCAPE IN NAGALAND

Abstract author(s): Imchen, Shisachila (Independent Researcher)

Abstract format: Oral

The Naga of Nagaland, northeast India, are among the few societies in the world that subscribe to the practice of megalith building in present times. In a number of villages, megaliths dot the landscape: they can be found located next to houses, in the fields, along the footpaths and by the roadside. Megaliths have profound relationships with their makers and to the places in which they are set, their placement the result of careful and strategic consideration by those involved in their installation. They are thus imbued with meanings by the people who build and live with them, and at the same time derive power from their landscape to convey meanings to the people who encounter and engage with them. This paper adopts a phenomenological perspective to explore the interrelationships between the people and the megaliths and their landscape. It demonstrates how the sensory experience of the megaliths and their landscape is a means by which the people transmit meanings and understand the world in which they live.

A. STONE CARVED AND SCULPTED - MENHIRS FROM THE ALGARVE (PORTUGAL) AND THE "DIMPLES"

Abstract author(s): de Oliveira Teixeira, Luisa (Universidade Autónoma de Lisboa)

Abstract format: Poster

Stone is one of the landscape elements that has most stimulated the human imagination. Its origin, texture and colour would have a symbolic value that would determine its selection. Menhirs were carved from the chosen rock, but only a few were chosen to become the support and canvas for a larger work of art. The characteristics (hardness and irregularity) would determine the typology and extension of the engraving. Gestures and memories that reveal knowledge and planning in the selection of raw materials and techniques used in megalithic monuments and iconography. The stone was used by different peoples as an object of worship and ritual. The decorative motif of „dimples“ in open-air rocks, as identified in the menhirs of the region under study and in different cultures, has led to various functional and symbolic interpretations. Numerous ethnographic studies, not only in Portugal but also in other countries, confirm the importance of these marks. The stones containing them are recognised as „fertilising stones“, associated with socio-religious practices and connoted as places of access to the supernatural, subterranean or celestial world, allowing contact with the transcendental.

B. MEMORIES IN STONE - COMMEMORATION OF THE PRIVATE LIFE OF DECEASED WOMEN ON SEPULCHRAL MONUMENTS FROM SALONA

Abstract author(s): Jadric-Kucan, Ivana (University of Zadar) - Banovac, Ivana (Archaeological museum of Split)

Abstract format: Poster

In Roman times, as today, the depictions on sepulchral monuments differed depending on the deceased's social status and their personal wishes. Certain people's lives were filled with various characteristics that their loved ones wanted to show in a picturesque and unique way in the place of their eternal resting place. Thus, individual examples of tombstones, often alongside the portrait of the deceased, contained relief representations that represented their daily life. On this occasion, we have decided to dedicate ourselves to the women whose tombstones, regardless of whether they belonged exclusively to them or to their families, bring exactly such representations and help us unravel interesting things from their lives and the customs of Roman society. These are primarily stelae and sarcophagi with depictions of objects that women used on a daily basis, such as toiletries or tools for spinning wool, but also depictions of animals

in the context of pets. All the monuments come from ancient Salona, once the capital of the Roman province of Dalmatia (today Solin), and date from the 1st to the 4th century.

334 (IN)VISIBLE WOMEN IN HISTORY OF ARCHAEOLOGY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Gutmiedl-Schuemann, Doris - Boesl, Elsbeth (Universität der Bundeswehr München, Historical Institute, project AktArcha) - Mahal, Ammandeep (University of Southampton. Beyond Notability) - Hjørungdal, Tove (University of Gothenburg) - Coltofean-Arizancu, Laura (German Archaeological Institute, Research Cluster 5: History of Archaeology)

Session format: Regular session

Women have always been part of archaeology, but have often remained invisible. Women have constantly contributed to the evolving fields of archaeology and heritage, but their parts often have not been recognised. In this session, we would like to shed some light on the roles of women working in and contributing to archaeology and heritage in the history of archaeology. We would like to discuss these questions:

- Why are some early female archaeologists still known today, while others have been forgotten and just recently rediscovered?
- What roles did women have in the early days of archaeology, and how did they contribute to shaping and developing archaeology and heritage as we know it today?
- Which methods can be used to research the history of women in archaeology?
- What kinds of sources and archives can be used to illuminate/reveal the history and networks of women in archaeology, history and heritage?
- In which archaeological settings and corresponding archives should we search for forgotten female archaeologists?
- How can we harness Digital Humanities methodologies to connect women across sites and organisations?
- How can we best represent women's mobility as archaeologists both nationally and internationally?
- What are the particularities of female archaeologists' research and interpretations of the past?
- Why is it still relevant to study the history of female archaeologists today? Why is this research unequally distributed across Europe?
- How can we communicate our findings to increase women's discoverability?

We welcome papers about individual biographies as well as overviews and comparisons of women and their work in a particular area of archaeology. We are also interested in discussing methods and approaches to research the history of women in archaeology and heritage, and in best-practice examples for communicating women's work in archaeology and heritage to the public.

ABSTRACTS

1 (IN)VISIBLE WOMEN IN HISTORY OF ARCHAEOLOGY: INTRODUCTION TO THE SESSION

Abstract author(s): Gutmiedl-Schuemann, Doris - Bösl, Elsbeth (Universität der Bundeswehr München, Historical Institute) - Mahal, Ammandeep (University of Southampton. Beyond Notability) - Hjørungdal, Tove (University of Gothenburg) - Coltofean-Arizancu, Laura (German Archaeological Institute, Research Cluster 5: History of Archaeology)

Abstract format: Oral

Women have always been part of archaeology, but have often remained invisible. Women have constantly contributed to the evolving fields of archaeology and heritage, but their parts often have not been recognised. In this session, we would like to shed some light on the roles of women working in and contributing to archaeology and heritage in the history of archaeology.

As a starting point for our session, we want to look back on past projects and publications about women in archaeology and heritage as well as on history of research of the discipline. We will highlight past focuses of research on early female archaeologists, and summarize the approaches, methods and tools that had been used so far for this research.

The aim of our introduction is to set a common ground for the upcoming paper and poster presentations as well as the discussions between speakers and participants in this session.

2 A FORGOTTEN ARCHAEOLOGIST: CAROLINE AMY HUTTON

Abstract author(s): Rovira Guardiola, Rosario (Institute of Classical Studies Library)

Abstract format: Oral

When Caroline Amy Hutton died in 1931, the *Journal of Hellenic Studies* published a laudatory obituary in which her role as a scholar, secretary and librarian was praised. Soon after that Hutton was forgotten even by the very institution that she had kept up and running during WWI. A period of crisis during which she held a position that until then had been reserved for men.

The aim of the paper is to revive the role of Hutton as a pioneer in the field of Classical archaeology. Having studied Classics at Girton College, she went on to give lectures at the British Museum where she also wrote a book on terracotta statuettes based on the institution's collections. A discipline that was then still uncharted territory. At the British Museum she also worked along Cecil Smith with whom she co-authored the catalogue of the Wyndham Cook collection. They also worked together at the British School at Athens, editing the *Annual of the British School at Athens*.

Hutton carried on with further administrative positions both at the British School at Athens and the Society for the Promotion of Hellenic Studies, where she collaborated in the running of the library. It was thanks to her that the library continued to be open during WWI and was able to provide one of its most valued services, the postal loans. However, Hutton never abandoned her research and continued to publish articles not only on her expertise, Greek archaeology but also on other topics such as the Wood archive; a invaluable source for the study of the city of Palmyra. Despite her active career and invaluable contributions, Hutton always published under her initials as she was advised very early on that her work would be taken much more seriously if her gender was concealed.

3 ANNA APOSTOLAKI AND THE HISTORY OF FEMALE ARCHAEOLOGY IN 20TH CENTURY GREECE

Abstract author(s): Pateraki, Kleanthi (Freelance Archaeologist)

Abstract format: Oral

The aim of the oral presentation is to highlight the case study of Anna Apostolaki (1881-1958) as a typical example of a "visible", internationally recognized early Greek female archaeologist.

Apostolaki was a celebrated expert in ancient textiles, preservation of ancient patterns and Greek weaving traditions. She was the first woman to direct a museum in Greece, specifically the National Museum of Decorative Arts of Athens (NMDAA) in 1935-1954. She contributed to the emergence of modern museology in the country. She also appears to have been the first woman to conduct archaeological research at a professional level in 20th century Greece. Furthermore, she is considered today as one of the first Greek folklorists.

Attention will be focused on her work in the NMDAA, which she promoted with all the means at her disposal; also, on her work, as a member of the administrative board and curator of the philological department, at the Lyceum Club of Greek Women, whose purpose was to promote Greek culture and preserve Greek customs. In addition, any existing information (e.g. from sources and archives), regarding Apostolaki's contribution to shaping archaeology and heritage in Greece will be presented. Furthermore, her works (essays, catalogues, etc.) that hold a prominent place in the international literature and gave her substantial recognition from the international scientific community will be referred. Moreover, her collaborations with renowned foreign researchers will be mentioned.

4 WOMEN IN ISRAELI ARCHAEOLOGY: BETWEEN HEGEMONY AND MARGINALIZATION

Abstract author(s): Katz, Hayah (Kinneret College on the Sea of Galilee)

Abstract format: Oral

The status of women in archaeology has been discussed broadly, mainly in regard to the USA and England. In contrast, in Israel, this subject has not been dealt with so far. Similarly to other countries, during the second half of the 20th century, most women were engaged in areas of archaeology that were seen as ancillary in that period and which required expertise in specific topics related to material culture (e.g., ceramic analysis as well as expertise in glass and beads). At this time, men conducted large-scale excavations. However, analyzing the main research areas of the women who have engaged in field archaeology indicates a unique phenomenon. The only areas of archaeology that are exceptions in this context are prehistoric research and the study of the Islamic periods, in which women were integrated as archaeologists leading significant excavations from the early 1980s onwards. It seems that this phenomenon must be linked to hegemonic and marginal relations in Israeli archaeology. Hegemonic archaeology deals mainly with the biblical (Bronze and Iron Ages) and classical periods. These periods have occupied and still occupy a central place in the archaeological research taking place in Israel and have gained prominence both among the archaeologists themselves as well as in Israeli society in general. Therefore, due to the fact that the prehistoric and Islamic periods are less „attractive“ in the Israeli research, they allowed women to integrate into this field more easily.

5 THREE WOMEN IN LITHUANIAN ARCHAEOLOGY: LIFE AND WORK ON TWO DIFFERENT SIDES OF THE IRON CURTAIN

Abstract author(s): Valotkiene, Šarune (National Museum of Lithuania)

Abstract format: Oral

The middle of the 20th century was a specific period in Lithuanian archaeology: up until then, the field had been an exclusively male profession. All of a sudden, three female archaeologists emerged—Regina Volkaitė-Kulikauskienė (1916 - 2007), Rimutė Jablonskytė-Rimantienė (1920) and Marija Alseikaitė-Gimbutienė (1921 - 1994). This presentation will explore possible reasons for this abrupt shift.

All of these women were students of Jonas Puzinas, Lithuania's first professional archaeologist. Might this association explain why they were quite suddenly accepted in a male-dominated discipline? Or could the explanation be a simpler matter of timing? What, if any, influence was contributed by the women's liberation movement? And the changing roles of women in the family unit? Or did the fact that all of these women came from families that valued academic pursuits carry additional influence?

In addition to these questions, this presentation will also explore the differences that these women archaeologists experienced while living on two different sides of the Iron Curtain. M. Alseikaitė-Gimbutienė moved to the USA in 1949 and developed her scientific career there, while R. Volkaitė-Kulikauskienė and R. Jablonskytė-Rimantienė remained in soviet-occupied Lithuania and pursued their scientific activities there.

6 THREE PILLARS OF A TRIPOD: A TRIPARTITE CASE OF THE FIRST FEMALE CHINESE ARCHAEOLOGISTS

Abstract author(s): Shi, Yun (Leiden University)

Abstract format: Oral

A British trained archaeologist, a Marxist archaeologist, an epigraphist, who is the first female archaeologist in China? Google search in English and Chinese yields different answers. In fact, there is no straightforward answer to the question. This paper examines three early female Chinese archaeologists:

Zheng Zhenxiang (1929-), internationally renowned for excavating the tomb of Fuhao, the first named and archaeologically attested female individual in China. The curious tale of a modern woman digging up an ancient woman brought her instant fame and made her a poster girl for the Maoist slogan "Women hold up half the sky".

Zeng Zhaoyu (1909-1964), studied archaeology at University College London and later worked at the Nanking Museum under both the Republican and the Communist government. She committed suicide in depression due to political and personal pressure.

You Shou (1906-1994), a traditionally trained epigraphist, paleographer, and calligrapher. She alienated herself from the center of academia at an early age, but resiliently survived various political turmoil over decades.

Their careers and fates are inextricably interwoven with the tumultuous 20th century Chinese history and politics. By comparing their biographies, this paper sheds light on the role of women in archaeology and society at large in 20th century China.

7 WRITING INSTITUTIONAL SEXISM INTO OUR HISTORIES

Abstract author(s): Teather, Anne (Bournemouth University; University of Highlands and Islands) - Pope, Rachel (University of Liverpool)

Abstract format: Oral

We will present on the survival of gender inequalities in the UK archaeology sector across 1990-2020. We will demonstrate how an early equality and diversity agenda (Morris 1992) was systematically dismantled by the late-1990s, and explore the impact of this on women's careers, to the present day. We argue that a refusal to modernise the professional sector in line with legal requirements for women workers' needs, underpins ongoing economic precarity in the sector. We detail the work of those volunteers lobbying for equality, alongside data from the Chartered Institute for Archaeologists' employment surveys, to show how and why many women, often reluctantly, were leaving archaeology in their 30s, in a continual 'leaky pipeline'. We frame this work as institutional ethnographies. We find core issues linked to this 'sector exodus' as a gendering of tasks/under-employment, a lack of support around parenting, and aspects of gendered promotion, leading to pay disparity.

8 INTERVIEWING THE INVISIBLE: A METHODOLOGICAL APPROACH TO KNOW OUR RECENT PAST

Abstract author(s): Zarzuela, Paloma (Universitat Autònoma de Barcelona)

Abstract format: Oral

The history of archaeology is no longer an area of expertise for eminent professors and retired professionals. As a field of study, it is already well established and have made a major contribution to Archaeology as a whole. Consequently, in order to make further progress, it is necessary to continue developing methodologies that allow us to obtain accurate data. In my view, oral history offers numerous advantages to understand the recent past of the discipline, particularly if we pretend to integrate a feminist vision of it. In this communication I explain why interviews are a crucial tool to transcend the traditional narratives about the history of archaeology and go beyond the renowned main characters. The interviews have an inherent vast and so far, unexploited potential. They open a whole range of possibilities for knowing aspects of an individual other than strictly scientific ones. In this sense, the path of a career might be compared to personal events and decisions that affect the professional life of an archaeologist. In the case of women, it is especially relevant as many studies highlight the importance of mentoring, marriage, motherhood, etc. in terms of career development and professional growth. In addition to that, interviewing women might also serve as the due recognition that many female archaeologists do not receive for their (in)visible work.

9 EARLY WOMEN IN PREHISTORIC ARCHAEOLOGY: THE CASE OF BERLIN, 1880S TO 1930S

Abstract author(s): Bösl, Elsbeth - Gutschmiedl-Schumann, Doris (Universität der Bundeswehr)

Abstract format: Oral

Between the 1880s and the 1930s, more women were active in prehistoric archaeology in Berlin than in any other city in Prussia and the German Empire. The earliest women, such as Julie Schlemm (1850-1944) were self-taught, since women were not admitted to regular university studies in Prussia until 1909. The Berlin Society for Anthropology, Ethnology and Prehistory (BGAEU) was their forum, and a place for them to engage in research and science communication. Among the female prehistorians of the following generation such as Elisabeth Bellot (1881-1956) and Gertrud Dorka (1893-1976), were many teachers who trained in volunteer courses lead by prehistorian Albert Kieckbusch at the Märkisches Museum, also located in Berlin. Some of these women went into voluntary archaeological preservation and heritage management, some went later to university, studied and made archaeology their profession. While we present our findings on these exceptional women in their socio-political and historical contexts, we discuss our historical-biographical approach and its limitations and we point to the sources of our research.

10 WOMEN ARCHAEOLOGISTS OF UKRAINE: CONSTRUCTING A NEW PROFESSIONAL IDENTITY

Abstract author(s): Shabelnikova, Irina (Oles Honchar Dnipro national university)

Abstract format: Oral

In modern society the women have a problem of finding a personal identity. This is directly related to the problem of professional self-identification and new professional identification as «women in archaeology». The empowerment of the living space of women led to a search for their own place in the socio-cultural, intellectual and professional sphere in the second half the 20th and 30s of the 20th century. In short, during this period she is creating her own identity. From this point of view, the problem of the appearance of a woman archaeologist, is actual and insufficiently studied. The integration of the «female element» into archaeological science indicates that women began to master an intellectual and professional field atypical for their gender. Because archaeology has long been considered a male-dominated field. This is confirmed by attempts to recreate the life and creative paths of some women archaeologists of this period, such as: P. Uvarova, K. Melnyk-Antonovych, A. Kartsova-Miklasheska, A. Skrylenko, N. Polanska-Vasulenko, V. Kozlovska, I.Fabrytsius, N.Viazmitina, etc. However, it should be noted that the phenomenon of the appearance of the «woman archaeologist» is a prime example of a search and construction of their own professional identity.

The theoretical and methodological basis of the study is the concept of ego-identity statuses by Canadian psychologist J. E. Marcia, which is based on E. Erikson's identity theory. Based on two criteria («occupation» and «ideology»), J. E. Marcia identified and characterized four identity statuses: identity diffusion, moratorium, foreclosure identity, identity achievement. The use of J. E. Marcia's concept of ego-identity in combination with the results of R. Josselson's research gave us the opportunity to highlight the issues, such as: motivation, professional self-identification of women archaeologists and constructing their own identity, as well as to outline the ways of their entry into the archaeological academic community.

11 USING WIKIDATA TO MAKE THE INVISIBLE VISIBLE

Abstract author(s): Mahal, Ammandeep (University of Southampton)

Abstract format: Oral

WikiData enhances discoverability on Google, therefore it is important women are adequately represented on WikiData. Historically few women held salaried professional positions or formal occupations, which are privileged on WikiData, thus how can we integrate women's work effectively?

In October 2021 the Beyond Notability Project team began constructing a WikiBase to record women's work in Archaeology, History and Heritage from 1870-1950. We are using linked open data principles, which are based on triples, to construct statements about women's activities and where relevant link them to WikiData properties. While WikiData properties are useful for reflecting women's work they do not necessarily map onto the full range of women's activities in Archaeology, History and Heritage therefore the team are constructing an ontology that is inclusive and reflects women's activities and networks in a more nuanced way. For example, whilst WikiData already has a property for 'Director of Excavation', the project has created property for 'Member of Excavation' which has enabled us to incorporate more women within the context of archaeological work.

I will present case studies to explore how we can use and add to WikiData properties to represent women's activities and roles in archaeology and beyond. From information in the archive, augmented by research into other primary sources, we are developing detailed entries on women's lives and linking them to organisations and fields of work that demonstrate their public visibility, in their lifetimes. We are also connecting these women to larger databases such as the Archaeological Data Service (ADS) through linked open data. In some cases we have been able to add more detail than was originally available.

Overall, this presentation will explore how we use WikiData as a basis from which to capture women's activities and challenge the value we place on certain forms of formal work.

12 WOMEN IN CROATIAN ARCHAEOLOGY

Abstract author(s): Solter, Ana - Balen, Jacqueline (Archaeological museum in Zagreb)

Abstract format: Oral

Until the middle of the 20th century, there are no records of female archaeologists in Croatia, either professional or amateur. Amateur archaeologists were not an uncommon phenomenon in Croatia. They were usually part of a network of trustees who collected archaeological finds and carried out excavations. During the one hundred years of the existence of this network, all the trustees were men. All Croatian professional archaeologists of the 19th century studied in Vienna until 1896, when the Chair of Classical Archaeology was established at the Faculty of Philosophy of the University in Zagreb. Women were allowed to enrol as full-time students in the fall of 1901. Before World War II, however, there were no women archaeologists employed in Croatia. Women studied archaeology in almost equal numbers to their male counterparts, but could only find employment as teachers in secondary schools. In this presentation we will try to find out the reasons for this lack of female presence in Croatian archaeological history and what caused the rapid and sudden change in the second half of the 20th century.

13 BACK TO THE SECOND ROW: PETROGLYPH ARTIST ERIKA TRAUTMANN BETWEEN RESEARCH AND POLITICS

Abstract author(s): Perschke, Reena (University of Leicester)

Abstract format: Oral

Since its beginning, the historiography of rock art involves mainly male scientists. Female researchers were just painters, drawers, assistants, travel companion, secretaries or "lovers" in field. Naturally, one of the reasons was that women were largely denied access to academic studies. With no formal training, they were left with only a supporting role. Often ignored, however, these women made a significant contribution to the discovery and documentation of rock art.

The life of Erika Trautmann (1897-1968) presents one example of a female researcher which fell into shadows despite an impressive lifetime achievement in active fieldwork. As trained rock art copyist from the Frobenius-Institute (Germany), Trautmann went to several field trips before she successfully managed to get her own expeditions – first from the Frobenius-Institute, since 1938 together with her partner, the classical philologist Franz Altheim, from the so-called "Ahnenerbe". She was the only woman with research projects in this pseudo-scientist national-socialist society of the SS.

Her excellent political connections brought her even foreign travel possibilities during World War II. Trautmann's and Altheim's ideological interpretation of the petroglyphs contributed severely to National-Socialist science. After the end of the war, however, only Altheim was able to continue his career successfully, while Trautmann only received

minor editorial commissions for photographic works. Her life was similar to that of so many women who had to step down into the second row in favor of the returned partners.

What remains of a female scientist's life? Her estate was thrown away after her death, so only her publications as well as her rock art copies and travel reports in the archives survived. Only recently, the new digitalization of her rock art copies, the publication of a biography and some exhibitions from the Frobenius-Institute increase the knowledge of her achievements and pull her back into the light.

14 **VISIBLE WOMEN - THE TRADITION OF SWEDISH FEMALE ARCHAEOLOGISTS IN MEGALITH RESEARCH**

Abstract author(s): Hjorungdal, Tove (Department of archaeology and ancient culture)

Abstract format: Oral

Among Swedish scholars contributing new approaches in megalith investigations, the majority were, and are women. This paper has its background in an anthology chapter I was invited to write on female archaeologists' work in Sweden. The real pioneers among megalith explorers, Professors Lili Kaelas (1919-2007) and Märta Strömberg (1921-2012) are focused. They took up their careers in the 1940s, a time when women not frequently were engaged in paid field work, and often experienced gender biases. Both were, however, salaried from their early careers, and had important positions. Their professional lives were compared and seen on a political and social background. They contributed new methods in field work, in ceramic classifications, and were active in European contexts, but disagreed on vital aspects of megalithic environments.

Iberian archaeologists, Vera Leisner and Philine Kalb seem to have been of importance to subsequent generations of female megalith-explorers. But Kaelas and Strömberg initiated new paths. Their contributions will stay among the standard reference works on megalith contexts. Therefore, an interesting paradox is that to neither of them had the profession of the archaeologist been the dream of their youth.

An overview shows a tradition of female scholars in megalith investigation, comprising construction details, placing the dead, equipment, chronologies, economy, ritual and astronomic aspects, and issues on environment and settlement. Characteristic to the work of present female scholars is a focus on other aspects than the tomb construction itself. This is much due to new scientific methods; frequently developed and improved by themselves. Analyses of equipment in the graves, together with bio-molecular analyses make much of the base for their interpretations. In my Gothenburg environment, female colleagues recently have presented new approaches to chronology and to the use of megalithic graves in a long-time perspective.

15 **WOMEN IN THE ARCHAEOLOGY OF WESTERN CENTRAL SARDINIA**

Abstract author(s): Puddu, Mauro (Ca' Foscari University of Venice)

Abstract format: Oral

Sardinia is an island where the local population is constantly in contact with archaeological features. The women and men of the rural areas in particular are very familiar with the archaeological structures that emerge regularly while they undertake agricultural activities on the fields. While this has brought several men to become renown figures in Sardinia's archaeology (both as professionals and as popular experts of the territory), the same has not happened with women. Some of these women have gone on pursuing their interest in archaeology by studying it and working as archaeologists, others have contributed to the archaeology's safeguard from their stance as active citizens. This paper focuses on a few of those women who contributed to the development of archaeology in Marmilla, the most fertile of the rural regions of Sardinia both now, and in antiquity. This is not only meant to mechanically look for women in the history of Sardinia's archaeology. The aim of this paper is to test if recollecting the fragmented narratives of ancient Sardinia offered by women can contribute to a solid reassessment of the generic colonial paradigm that dominates in the island based on the so-called "fathers of Sardinian archaeology".

Their voices will be heard directly by the audience of this session, as the methodology used in this paper involves sharing the interviews of those protagonists of local archaeology while contextualising them within the gender equality landscape in Italy.

TRACING FEMALE ARCHAEOLOGISTS - (IN)VISIBLE WOMEN IN THE HISTORY OF THE RÖMISCH-GERMANISCHE KOMMISSION (RGK)

Abstract author(s): Rasbach, Gabriele - Hofmann, Kerstin - Schröer, Sandra (RGK - Romano-Germanic Commission DAI)

Abstract format: Oral

The archives of the RGK contain numerous traces of female archaeologists and women involved in archaeology. They appear as former employees, travel fellows, correspondence partners, leaders or collaborators of research projects but also as illustrators and organizers supporting the institute's research. They appear in letters, manuscripts, administration forms and photographs of events and excavations. The diverse range of documents makes the RGK archives a valuable resource for tracing both the visible women in archaeological research and committees as well as those that remained invisible. The biographical information system Propylaeum-VITAE (https://sempub.uni-heidelberg.de/propylaeum_vitae/de) provides a tool to make these women, their associated archival records and other sources like publications more visible. It makes it possible to display scattered holdings and reconstruct the various networks and impact of these women on archaeological research.

Using four women from our archives as examples, we will highlight and explain the different ways in which women are (in)visible in archaeological research: Renate Feubel (1908-1989), a classical archaeologist whose archaeological career ended after her marriage; the art historian Maria Bersu (1902-1989) who was a crucial supporter of her husband Gerhard Bersu's research and was well-known in the research community at the time - but is largely forgotten today; Thea Elisabeth Haevernick (1899-1982), a prehistorian archaeologist who was established in academia but never held a leading position; and Maria Radnoti-Alföldi (1926-2022), who has been visible as a scholar as well as a leader and member in scientific committees. Accordingly she left a wide variety of traces not only in archives but also through numerous publications, her students and their work inspired by her.

SOCIAL NETWORKS AND KNOWLEDGE PRODUCTION: HUNGARIAN FEMALE ARCHAEOLOGISTS AND THE RÖMISCH-GERMANISCHE KOMMISSION IN THE TWENTIETH CENTURY

Abstract author(s): Coltofean-Arizancu, Laura (Archaeology and Gender in Europe - AGE, EAA Community)

Abstract format: Oral

Research devoted to women in archaeology has increased considerably in the last thirty years, confirming the previously unrecognized role they played in the development of the discipline. Most of this research has focused on reconstructing the intellectual biographies of female archaeologists in their socio-political and cultural contexts, with little emphasis on the various networks that they were part of and the roles that these might have had in their archaeological pursuits. This paper examines the social networks – e.g., personal, professional, scientific collaboration networks – in which women archaeologists have engaged. It does so by analyzing the connections between four Hungarian female archaeologists – Éva Bónis (1919-1999), Gizella Erdélyi (1906-1970), Ilona Kovrig (1912-2007), and Amália Mozsolics (1910-1997) – and representatives of the Römisch-Germanische Kommission (RGK, Frankfurt am Main) of the German Archaeological Institute in the twentieth century, based on their correspondence which can be found in the archives of the same institution. The paper discusses the ways in which the links with the RGK supported these women's work and knowledge production, from book exchanges and research stays to publishing and applying interdisciplinary methods and techniques to analyzing archaeological artefacts, as well as the roles and positions of these women in the RGK's own networks and knowledge exchange processes.

INVISIBLE WOMEN OF ROMAN FRONTIER STUDIES: THE STORY OF A PHOTO

Abstract author(s): Ivleva, Tatiana (Newcastle University) - Jones, Rebecca (Heriot-Watt University)

Abstract format: Oral

During the preparation of a publication on the History of the International Congress of Roman Frontier Studies (Limes Congress) to mark its 25th meeting in Nijmegen, Netherlands, we came across a photograph from 1949. The image shows the delegates of the first Congress held in July 1949 in Newcastle-upon-Tyne, UK. Whilst only one female speaker is known to have delivered a paper at that meeting, the photo shows eight more women, which were initially assumed to be the spouses of the delegates because of the Congress's nature as one of military history dominated by male scholars, particularly in the early years. The search to identify these women has turned into discoveries of biographies of many now largely forgotten early female archaeologists engaged in different aspects of Roman frontier research. The women we have been able to identify have nearly all turned out to be professional archaeologists, very prolific writers and, in their heyday, respected members of the academic community, from early career scholars to those in their 60s. Why are they not better known? Why do we know the publications and contributions of many of the men we have identified on the photo, but know less by the women?

In this paper, apart from briefly presenting a few individual biographies of these female trailblazers, we will touch upon their roles in and contributions to the early heavily male dominated Roman frontier research community. We will also present our search methods and strategies, and some of our ambitions for the future to increase the visibility and understanding of the work of these pioneers in our discipline.

19 **ENGENDERING FIELDWORK PRACTICE DURING FRANCO'S DICTATORSHIP: WOMEN AND THE INTERNATIONAL SUMMER COURSES OF AMPURIAS BETWEEN 1947 AND 1975**

Abstract author(s): Santos Retolaza, Marta (MAC Empuries) - Díaz-Andreu, Margarita (ICREA; Universitat de Barcelona) - Hernández Pastor, Elisa (MAC Empuries) - Oliveras Llovera, Carme (Independent researcher)

Abstract format: Oral

In the 19th and early 20th centuries archaeological fieldwork was almost exclusively the preserve of men. At this time field training for the first university students was undertaken on an unofficial basis, and women were not welcome. This obviously had consequences in their disengagement from the networks of influence – the invisible colleges – that were behind many of the new appointments in the discipline. Spain was not an exception: the only women who had been able to undertake fieldwork prior to the Spanish Civil War (1936-1939) had been self-taught (and sufficiently well-off), or had been trained by their relatives. Thus, the acceptance of female students in the International Summer Courses of Ampurias since their creation in 1947, which combined lectures, travelling to visit sites and some excavation training, was key for the future of women in the archaeological profession.

In this article our aim will be to examine in what ways the Ampurias courses made possible for women to become visible in archaeology. We will analyse what happened with the women who had first-hand experience visiting archaeological sites for approximately two weeks, and also had some (initially short) training in excavation techniques from 1947 until 1975, the latter date the year of the end of the dictatorship. Questions that we will endeavour to answer include: from the more than 50 women attending the course in the first decade, a period in which a fascist-style gender ideology predominated, how many of them became professional archaeologists? Was there a difference between the majoritarian Spanish participants and their foreign counterparts, particularly from Italy? What happened with their followers in the ensuing periods of the regime? Did their role change throughout the different periods? Why some of them are still known today, while others have been forgotten? And, finally, what can we learn from rediscovering them?

337 **VISUALISING MOBILITY: BEYOND ARROWS ON MAPS**

Session theme: 6. Contested Pasts & Presents

Session organisers: Kay, Kevin (University of Leicester) - Houghton, Mark (Aarhus University) - McFadyen, Lesley (Birkbeck, University of London)

Session format: Regular session

Archaeological interest in migration, individual mobility, long-distance 'trade' and the spread of technologies has revived in the past decade, bolstered by new scientific techniques. This interest has been accompanied by a distinctive visual language: the production of maps (often at a continental scale or greater) showing the whereabouts of genetic 'peoples' or material 'types', and arrows representing their movements. Many archaeologists are rightly uneasy at the return of such images to the forefront of our narratives, warning of seductive simplicity and ethno-nationalist baggage. What visual tools might serve a more nuanced archaeology of mobility?

This session invites reflections on the link between illustration and conceptualisation in mobility studies, and propositions for better visual practices. We ask whether illustrations have played a role in shaping and confining our narratives: it is easy, for instance, to 'draw a line' between military maps of troop movements and archaeological visions of migration as a violent and masculine affair. It is critical to consider how we open up new imaginative spaces, and we welcome bold papers exploring the possibilities. We are also interested in the other forms of movement – seasonal, circuitous, or slow – which have proven difficult to visualise, and welcome papers contending with illustrating these movements at various scales. Although contributions that assess specific mobility 'events' in prehistory are welcome, we are especially interested in discussing the theory behind (or in) visualisations of mobility. Creative 'spitballing' and experimentation with images are encouraged; polished end-products are optional.

1 USING STRONTIUM BASELINE MAPS TO MODEL AND VISUALISE MOBILITY

Abstract author(s): James, Hannah (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel) - Dalle, Sarah (Department of Archaeology, Ghent University; Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel) - Cheung, Christina (Department of Anthropology, Chinese University of Hong Kong; Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel) - Griffith, Jacob - Gerritzen, Carina - Snoeck, Christophe (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel)

Abstract format: Oral

Bioavailable strontium baseline maps are critical for interpreting strontium isotope analysis of archaeological materials. Visualisations are crucial for both producing usable forms of this strontium baseline data and for illustrating archaeological mobility patterns, and they need to be flexible and easily adaptable to the various research questions.

The first part of this talk will focus on how to model strontium isotope variation across a landscape (an isoscape), aided by different visualisation techniques. With these different approaches, such as extrapolated surfaces using Empirical Bayesian Kriging with Regression and median per geological unit, how these modelling techniques can greatly influence the predicted isotopic values will also be discussed.

Secondly, using archaeological examples from Corsica and Portugal, this talk will consider how we can use a baseline to first model and then visualise short-term or long distance mobility patterns. Integrating variables such as terrain, soil type, climate details, plant or animal habitat ranges, food preferences and any archaeological evidence of mobility, trade routes or borders, helps limit and guide the probability assessment of potential mobility patterns. Methods such as network analysis will also be used to assist in visualising potential mobility on both an individual and population level.

2 NOMADIC MOBILITY IN NORTHERN QATAR (AND BEYOND). FROM SITE TO TEXTURE AND FROM EXCHANGE TO EXTROVERSION

Abstract author(s): Carvajal Lopez, Jose (University of Leicester)

Abstract format: Oral

This presentation will focus on the results of the Crowded Desert project, a multiperiod survey with excavations in Northern Qatar that ran between 2015 and 2019. The project aimed to document the linkage of nomadic and sedentary communities in an area of 25 km² in the northern part of the Qatari peninsula.

It soon became apparent that traditional concepts of site and mobility could not be applied to research on the nomads, whose conception of the space is not bounded by the same limits as those that we conceive in our modern societies. Interestingly, the research suggests that sedentary groups in Qatar, related to nomads in origin and in social links, share some aspects of this boundlessness.

In the paper I will present two vignettes coming from the research project. The first one relates to the discarding of the concept of site (at least as a basic unit of archaeological understanding of the landscape) and my focus on textures at different scales of time and space. The second vignette will focus on the abandonment of the idea 'finds relates to exchange' and the use instead of sets of material culture to evaluate the 'extroversion' of the groups under study. My use of 'extroversion' in this context is designed to enhance the disposition of the nomads "to direct interest to things and places outside their own groups" (to paraphrase the online definition of the word that can be found in Dictionary.com).

These two vignettes aim to show that mobility of nomads is deeply ingrained in their ontologies, and that it plays an essential role in any process of social change (as I will show when I speak about Islamization).

3 NOTHING TO SEE HERE: MAKING ABSENCE VISIBLE IN NEOLITHIC MOBILITY NARRATIVES

Abstract author(s): Kay, Kevin (University of Leicester)

Abstract format: Oral

The spread of settled farming life is one of the defining debates of Eurasian prehistory. Radically different archaeological positions orbit a common visual core: maps showing the 'first arrival' of farming settlements sweeping across regions and continents. Such images create binary opposition between Neolithic and Mesolithic spaces and lifeways;

extend colonial logic of terra nullius; and draw attention disproportionately to ‘firsts’ and away from longer trajectories of social process. Perhaps more subtly, ‘first arrival’ maps frame the Neolithic as a questions of what is present, where, and when? This experimental paper seeks to inject new concepts and opportunities into the study of Neolithic mobility by inverting the logic of presence. Can we visualise the absences in Neolithic and Mesolithic worlds that set people in motion? What new narratives might arise from letting needs, lacks and deficiencies structure our visual space at various scales? Several experimental visuals, focusing on Turkey and the Aegean, help to reorient visual spaces, and narratives, of Neolithic mobility.

4 DRAWING DRUMADOON

Abstract author(s): McFadyen, Lesley (Birkbeck, University of London) - MacGregor, Gavin (Archaeology Scotland)

Abstract format: Oral

This talk is about a new project located at Drumadoon Farm, Isle of Arran, Scotland that brings together archaeology, art, ecology and geology in group drawing exercises with students. More broadly, it is about drawing our thinking and drawing together. It looks at how we account for patterns of inhabitation in our archaeological drawings, and, in particular, the ebb and flow of these forces with, against, and often in spite of the architecturally bounded. Initially, from walking-drawing through a particular area of the landscape, we explore the relationship between building and not-building in landscapes, and how tensions between the past, present and future of place are revealed. We then gather around a large table on which we roll out a length of paper in order to draw and mark together. The work that follows on from this opens up discussion on how we draw the everyday performance of lively space, and it explores ways in which to value the human and the non-human in landscapes. It is a mark-making process, and a critical way of thinking through drawing, that leads to a different kind of account of memory and place.

5 VISUALISING ANCESTRAL COMMONS: CYCLICAL SEASONAL ENTANGLEMENTS OF HUMANS AND OTHERS

Abstract author(s): Haughton, Mark - Løvschal, Mette (Aarhus University)

Abstract format: Oral

Much of prehistoric life was occupied with repetitive movements and actions – not least the seasonal movement of herds between pastures, often accompanied by significant human and animal collaborators/enablers, and various activities of care, control and craft. Representing such cyclical movement visually is challenging. It is difficult to achieve without rendering the cyclical year in linear time, whereupon cycles of different duration are a particular challenge and eternal time must vanish entirely.

This paper is based in the pastures of prehistoric Denmark. We will attempt to trace the cyclical becomings of people, sheep, cattle, heather and the ancestral dead. Repetitive movement and action forges links between these elements to create landscapes of expected return: the ancestral commons. We explore different ways of representing these cyclical rhythms through a variety of modern (and some not-so-modern) methods – from medieval books of hours to every academic’s favourite American diagram: the Gantt chart. Ultimately, we find that visualising the ancestral commons requires experimenting with different ways of seeing, just as much as different ways of drawing.

338 SETTling WATERSCAPES IN EUROPE II: PREHISTORIC SUBMERGED SITES IN LAKES, BOGS AND RIVERS - PART 1

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Hafner, Albert - Heitz, Caroline (University of Bern) - Pranckėnaitė, Elena (Klaipėda University) - Piqué, Raquel (Universitat Autònoma de Barcelona) - Dworsky, Cyril (Kuratorium Pfahlbauten)

Session format: Regular session

Prehistoric submerged sites in lakes, bogs and rivers of Europe have been intensively studied for more than 150 years. They mark the beginning of settlement archaeology, and wooden architectural elements could be recognized for the first time. Due to the outstanding preservation under waterlogged conditions, prehistoric submerged sites also stand for the dawn of interdisciplinary archaeological research and the positioning of prehistoric archaeology between the humanities and the natural sciences. The first ‘Settling Waterscapes in Europe’ session was successfully organized during the EAA 2016 Annual Meeting at Vilnius, Lithuania. The lectures have been published as volume 1 of the ‘Open Series in Prehistoric Archaeology’ (<https://www.sidestone.com/books/settling-waterscapes-in-europe>). This upcoming session of 2023 can be understood as a follow up discussion that extends and enhances the topic.

Although evidence of submerged prehistoric sites became known early in many regions of Europe, research focused for a long time on the pile dwellings of the Alpine space. These sites have been inscribed as a serial object on the

UNESCO World Heritage List in 2011. It is very encouraging that in the last 20 years research on the phenomenon of submerged sites in lakes, bogs and rivers has intensified in numerous European regions. It thus reveals the amazing diversity of adaptations of settlement activities related to inland water bodies.

The session organizers consider it important to present and discuss new data and hypotheses on the evolution of building structures, settlement patterns, and regional chronologies of waterscapes with clusters of submerged sites in Europe. We especially welcome interdisciplinary contributions that address environmental and economical adaptations to flooding, rising water tables, and other hazards associated with living near water.

ABSTRACTS

1 THE PHYSICAL EFFECTS OF THE REGULATED LAKES ON THE DISCOVERY OF MESOLITHIC SITES IN THE HIGHLANDS OF SOUTHERN NORWAY

Abstract author(s): Sayej, Ghattas - Kutschera, Morten - Bruun, Theodor - Norbakk, Emma (Agder County Council)

Abstract format: Oral

After the melting of the Scandinavian ice shield in the Holocene, the Norwegian coast became visible for the early pioneers around 9200 Cal. BC, and hundreds of Mesolithic and Neolithic sites were discovered along the coastline and the submerged areas. A very little focus was directed toward the less-populated highland and the mountainous areas, particularly around the freshwater lakes.

The dry Norwegian-summer of 2021 and 2022, has led to a shortage of water supply to the freshwater lakes, of which 1200 are regulated as hydropower reservoirs. Some of these lakes were as low as 20 meters below the highest regulated water level. This unique opportunity has uncovered many archaeological sites along the lowest regulated water level. Agder County Council's staff grasp this opportunity and surveyed the shores of three lakes called: "Epte", "Leland" and "Nesper". Dozens of Mesolithic and Neolithic sites were found along the shorelines. These discoveries have given us a new opportunity to find out and document the settlement patterns as well as the movements of these early pioneers. They were well familiar with the harsh inlands' areas and manage to utilise the natural passage between the coastline with its marine resources, and the inlands' area with its freshwater fish and wild games.

This paper will present the results of our new discoveries and will highlight the necessity to cooperate with the hydro-power companies, to rescue the hidden sites which are spread along the shores of the regulated lakes. This opportunity is unique and should be implemented all over the country, in order to be able to document and understand the movement of the early pioneers in the highlands and mountainous regions.

2 CONSTRUCTING CRANNOGS: THE CASE OF ARTIFICIAL ISLAND BUILDING IN NEOLITHIC SCOTLAND

Abstract author(s): Blankshein, Stephanie (University of Southampton)

Abstract format: Oral

Following the remarkable discovery of Swiss pile dwellings in the mid-19th century, antiquarians in Scotland became fixated on the curious artificial islands, or crannogs, built in their own extensive waterscapes. What ensued was a long and intense period of Scottish crannog research and ultimately the establishment of their predominately Iron Age origins. In the past few decades, however, several crannogs of Neolithic origin have been discovered in the Outer Hebrides, pushing the date for crannog construction and use back at least 3000 years. Following on from these discoveries, the Islands of Stone project was created with two primary aims: (1) to investigate one Neolithic crannog and its surrounding environment in detail to understand its construction, setting and use and (2) to determine if Neolithic crannog construction and use was a wider spread phenomenon beyond the few known examples in the Outer Hebrides. These aims have been addressed through a variety of methods including linguistic data mining, machine learning analysis, prospective field surveys and integrated terrestrial-underwater surveys and excavations. This paper will introduce these methods along with the preliminary results of the project, which reveal growing evidence for the complexity and intensity of Neolithic artificial island building in the dynamic waterscapes of Scotland.

3 BLACK LOCH OF MYRTON; AN IRON AGE WETLAND SETTLEMENT IN SOUTH-WEST SCOTLAND

Abstract author(s): Crone, Anne - Cavers, Graeme (AOC Archaeology Group)

Abstract format: Oral

Our understanding of Iron Age settlements and the societies that built them in Britain and Ireland is severely limited by a) a lack of surviving structural elements that allow an appreciation of the form and layout of individual buildings, b) a general lack of surviving floor deposits that could be analysed with a view to reconstructing activity areas and c)

a lack of chronological frameworks sufficiently refined to allow durations of activities and structures to be resolved at a finer grain than decadal-scale radiocarbon years, at best. Excavations carried out over the last decade at Black Loch of Myrton, south-west Scotland, however, have provided unprecedented quantities of new data in each of these problematic areas. Constructed in the late 5th century BC and reused intermittently until the 2nd century BC, the Black Loch settlement was sited in a marshy lake-side location in a manner similar to crannogs (lake dwellings built in Scotland and Ireland), but in a format indistinguishable from the defended enclosures that are found in large numbers in dryland locations in this period; the wetland conditions, however, have resulted in exceptional levels of preservation not only of timber structures and their associated floors, but of artefacts, ecofacts and proxy evidence such as sterols and other biochemical indicators. The approach taken to the Black Loch project was multi-disciplinary by design and as a consequence the excavations have produced a highly detailed record of the development of the settlement from establishment, through expansion, reconfiguration and eventual abandonment.

Black Loch is one of a cluster of well-dated Iron Age wetland settlements in south-west Scotland. This paper will present the evidence from the site and explore the chronology, development and function of these wetland sites within the context of the Iron Age landscape of south-west Scotland.

4 **WATERTIGHT ARCHAEOLOGICAL SOURCES IN LAKE PEIPSI**

Abstract author(s): Roio, Maili (Estonian National Heritage Board)

Abstract format: Oral

Lake Peipsi is the largest transboundary lake in Europe, lies on the border between Estonia and Russia. The lake is the fifth-largest in Europe and represents a remnant of a body of water which existed in this area during the Ice Age. There are archaeological findings from the sunken prehistoric settlements of Lake Peipsi almost along the entire coastline of the Estonian side. It can be assumed that in the Mesolithic and Neolithic the water level of the lake was almost 4-5 m lower than today, and the shoreline was located further towards the lake. So far, archaeological items have been found mainly up to 400 meters from the shore, which have been exposed either as a result of erosion during low water level or as a result of dredging the mouths of the rivers flowing into Peipsi.

The archaeological finds of Peipsi are quite diverse and rich considering the fact that no archaeological excavations have been carried out so far. For example, bone artefacts, refuse of bone working industry, as well as unworked animal bones, fish and bird bones, some human bones, and sherds of various pottery were found. These findings suggest that Lake Peipsi has been an important waterway since the Stone Age, with permanent settlements sites along its shores, the oldest of which dates back to around 7100 BC.

5 **SURVEYING A PILE DWELLING AT THE BOTTOM OF LAKE VALGJÄRV IN SOUTHERN ESTONIA**

Abstract author(s): Virtanen, Kalle (University of Helsinki)

Abstract format: Oral

My PhD study focuses on the remains of a pile dwelling at the bottom of Lake Valgjärv in southern Estonia. The site is situated on a shallow underwater ridge in the middle of the lake, where the depth ranges from 1 – 4 m. Valgjärv is so far the only known pile-dwelling site in Estonia. The 14C samples taken from the piles and timber structures resting on the bottom of Lake Valgjärv give evidence of three separate phases of settlement or other activity (3500BC–3100BC, 410BC–150BC & 560AD and 980AD). One of the major objectives in my research has been to explore the various ways to document and chart the extent of the underwater archaeological site in Lake Valgjärv. Simultaneously I have endeavoured to develop digitized methods to survey archaeological remains which extend over a large area and rest in shallow water, such as on Valgjärv site. To encounter the many challenges our specialized working environment brings about, I have combined total station measurements and photogrammetry, in order to document the structures in Valgjärv. One aim of the work is to produce a 3Dmodell of the site. Creating an as accurate documentation of the submerged structures as possible, also enables the comparisons between Valgjärv structures with building structures and settlement patterns of similar sites in the Baltic region and also in a wider perspective. It also gives us a better insight in understanding the need for this type of an adaptation on living by the water.

6 **NEW TYPE OF LAKE-DWELLINGS OF THE EARLY METAL PERIOD IN EASTERN LITHUANIA: INITIAL RESULTS AND INTERPRETATION**

Abstract author(s): Kraniauskas, Rokas (Klaipėda University) - Čičiurkaitė, Ingrida (Vilnius University; NGO Kultūros vertybių globos tarnyba) - Pranckėnaitė, Elena (Klaipėda University)

Abstract format: Oral

In 2021, underwater archaeological investigations were carried out in the inland waters of the Eastern part of Lithuania, in a specific area of a watershed linking the two major eastern Baltic rivers, the Nemunas and Daugava. Underwater survey in Lake Bėlis (Švenčionys district) recorded wooden piles surrounding a small isolated island. Archaeological

excavations were carried out in the years 2021–2022 on the island and underwater slope of it. The excavations revealed a prehistoric settlement on the island, according to C14 data dated back to the 6th century BC – 2nd century AD., fortified by a triple wooden fence.

Till now Lake Luokesa settlements from Early Metal period were known in Lithuania, which were built as a raised structure over the dump ground on the lake shoal. The new data broaden the understanding of settlement patterns and contribute to the analysis of environmental and economic adaptations in the Baltic region.

The presentation will provide interpretation of obtained data during the excavations (on land and underwater), results of interdisciplinary research and prospects of investigations.

7 THE LAKE FOLK. NATURAL AND ARTIFICIAL ISLANDS' OCCUPATION IN THE FIRST MILLENNIUM BC MASURIAN LAKELAND

Abstract author(s): Mileszczyk, Malgorzata - Nowakowska, Magdalena (Faculty of Archaeology, University of Warsaw) - Filoc, Magdalena (Department of Palaeobiology, Faculty of Biology, University of Białystok) - Pawlak, Jakub (Faculty of Archaeology, University of Warsaw) - Gackowski, Jacek (Institute of Archaeology, Nicolaus Copernicus University)

Abstract format: Oral

Many areas densely covered with lakes have been subject to specific settlement patterns in the past. Masurian Lakeland is no exception to this rule, as far as living on the islands, both natural and artificially constructed, is concerned. Especially interesting in this sense is the 1st millennium BC, when the latter, so-called lake grid dwellings were built, but simultaneously to the inhabitation of the natural islands. Although many such sites were registered since the 19th century, it is expected the majority of them have been devastated beyond the possibility of gaining further information; however, there are presumably many more waiting to be discovered. At the same time, data is still far too scarce and hardly any patterns have been appointed so far, not only due to the state of research but also a limited set of methods used in the previous study. In the latest decades, an interdisciplinary programme for research on the Masurian paleo-landscape has been introduced, but the applied resources are still very limited. Especially important is the creation of the chronological database as well as paleo-biological analyses, which have revealed rather interesting inferences when compared with the earlier study's results. Previous experience shows that the preservation of these exceptionally valuable archaeological sites was and still is endangered because of both natural and anthropogenic causes. Low awareness of the cultural heritage value along with the lack of preservation programme of said sites does not allow for optimistic future perspectives. In this matter, Poland differs significantly from many countries where similar sites are covered by the vast research and protection programme.

8 RE-EVALUATION OF THE PILE DWELLINGS IN THE WETLAND OF THE DÜMMER AREA IN LOWER SAXONY, NORTHERN GERMANY

Abstract author(s): Heumueller, Marion (Lower Saxony State Service for Cultural Heritage) - Brozio, Jan Piet - Feeser, Ingo - Wunderlich, Tina (Institute of Pre- and Protohistoric Archaeology, Christian-Albrechts-University of Kiel) - Schoon, Reinhold (Göttingen) - Wordtmann, Kimberly (Institute of Pre- and Protohistoric Archaeology, Christian-Albrechts-University of Kiel)

Abstract format: Oral

Already since the end of the 19th century the archaeological potential of the sites preserved in the sea ground and wetlands around the lake Dümmer in Lower Saxony, in front of the foothills of the low mountain range, was recognised. Until the middle of the 20th century, research and rescue excavations concentrated on the sites around the lake. Some of them were extensively excavated over a period of years. These results are still important milestones in archaeological research in the Central European lowlands in terms of reconstructing neolithisation or the structure and architectural design of Neolithic domestic sites. Later systematic field surveys showed that the domestic sites were oriented less towards the lakeshore and more towards the river Hunte, which crosses the Dümmer from north to south.

Three wetlands sites studied in the 1930s–1940s have been re-examined in recent years by new interdisciplinary analyses. The results show that the Lake Dümmer apparently had a key position in the settlement structure of the Swifterbant culture groups, which has so far been localised mainly in the Netherlands. For the 3rd millennium BC, settlement sites and temporary camps can be proven. The most recent investigations show further phases of activity in the late pre-Roman Iron Age and during the Roman and medieval period. Furthermore, the prospections and excavations show the vulnerability of the valuable wetland sites, which are currently severely affected by desiccation, agricultural use and even construction projects in the bogs for nature conservation.

9 MIDDENS AT THE WATER'S EDGE: SHIFTING SALINITY, ESTUARINE HABITATION, AND SUBMERGED DEPOSITS IN SOUTHWESTERN FLORIDA, USA

Abstract author(s): Holland-Lulewicz, Isabelle (Pennsylvania State University) - Thompson, Victor (University of Georgia) - LeFebvre, Michelle (Florida Museum of Natural History)

Abstract format: Oral

Sea-level rise on the Gulf Coast of southwestern Florida, USA throughout the Holocene has inundated archaeological sites at varying scales. The fluctuations within the past 1,000 years have produced water-logged portions of sites located along the modern-day shoreline, preserving usually taphonomically sensitive materials while also creating unique deposits for evaluating past environmental conditions and the over nature of these complex socio-ecological systems. This process of partial inundation contributes unique perspectives to the complex relationships between people and their environments, particularly in relation to estuarine resource management strategies. Recent research at a large shell midden-mound site in southwestern Florida, USA revealed a very well-preserved water-logged midden. The Pineland Site Complex (8LL33, etc.), located right along the water's edge, was occupied by the Calusa from around AD 50 up through contact with Spanish colonizers. In this paper, we will discuss the partially water-logged midden and how it provides new insights into the relationship between resource management strategies and environmental conditions at the onset of the Little Ice Age (ca. AD 1250-1850) through a combination of zooarchaeological analyses and Bayesian statistical modelling of radiocarbon dates. The water-logged materials, including remnant fishing nets and abundant unburned plant and animal remains, have significantly contributed to our understanding of not only past human-environmental interactions at this site but how we conceptualized the broader complex socio-ecological systems of the region and beyond.

10 SPATIAL LAYOUTS AND SOCIAL ORGANISATIONS OF SETTLEMENTS IN WATERSCAPES

Abstract author(s): Spring, Markus (Institute of Prehistoric Archaeology, Zurich University)

Abstract format: Oral

Modern cities are complex spatial systems, catering for a wide range of needs. Whether through micro-economically motivated foreground networks of e.g. 'central business districts', encouraging the emergence of 'generative' land uses, such as retail, or movement-poor socio-culturally influenced background networks of 'conservative' residential areas, the emergence of spatial patterns in today's cities is seen by urban morphologists as instrumental for the flow of peoples and the way we meet and interact.

Prehistoric settlements in waterscapes, on the other hand, may at first sight be considered a far cry from modern cities. They were not the first urban structures, often rather small and – quite similar to modern space stations – built into for human habitation basically hostile environments. However, since their spatial layouts had first to be artificially created, they offer the unique opportunity to gain an insight into how physical space may have influenced the mindset of prehistoric societies. Spatial understanding reflected not only their social organisations but was also a prerequisite for the emergence of geopolitical meta-structures such as 'chiefdoms' and finally states.

The paper employs Space Syntax, a bundle of geometrically and mathematically based methods, primarily used in modern architecture and town planning. It explores the influence; open spaces of these specifically designed built environments in waterscapes had on human movement and interaction. Did these prehistoric settlements follow the same spatial laws as modern cities? And how did their spatial layouts reflect or influence the social organisation of the society who built and lived in them? Although the study concentrates on late Neolithic and Early Bronze Age examples in the circumalpine region, the proposed approach is neither limited to settlements in waterscapes nor any chronological period or cultural background.

11 MOVE - SPATIAL MOBILITY AND RESILIENCE CAPACITY OF LAKESHORE SETTLEMENT COMMUNITIES AT THE END OF THE 4TH M BC

Abstract author(s): Hafner, Albert - Heitz, Caroline (University of Bern; Oeschger Centre for Climate Change Research)

Abstract format: Oral

Understanding change in early societies is a longstanding key question in Prehistoric Archaeology, but the decisive parameters of societal vulnerability and resilience are still poorly understood. In the northern Alpine Foreland, one of the most striking societal transformations of the Late Neolithic occurred at the beginning of the second half of the 4th millennium BCE: the emergence of the «Horgen» cultural sphere – named after its enigmatic coarse pottery – dating from between 3400 and 2800 BCE. Numerous outstandingly preserved dendro-dated Neolithic lakeshore settlements provide a promising source material to study the phenomenon. The SNSF research project MOVE (2021–2024) aims to gain a deeper understanding of the formation as well as the end of the «Horgen» cultural sphere and its environmental and societal conditions. Our pilot study conducted for the time around 3400 BCE shows that

at the beginning of the respective cultural transformation coincides with a climatic deterioration that led to rising lake-levels. They destroyed former settlement areas on the lakeshores and led to temporal interruptions of settlement activities. By using archaeological information on settlement features as well as various global and regional paleoclimatic proxy data we inferred that especially the longer-term lake-level rises of higher magnitudes hit the agricultural communities hard but did not lead to any form of social collapse. On the contrary, the immediate repopulation of the lakeshores after the lake floods suggests that spatial mobility and the temporary relocation of settlements to the hinterland were a successful social coping practice in dealing with these challenges. Since the frequent relocation of settlements was already immanent to these communities' social practices, their capacity for residence-based spatial mobility served them as resilience capacity.

12 “MUNTELIER, PLATZBÜNDEN”, SWITZERLAND, RETHINKING THE ARCHITECTURAL STRUCTURE OF A 4TH MILLENNIUM BC LAKE SHORE SETTLEMENT

Abstract author(s): Gottardi, Corina (University of Bern) - Bolliger, Matthias (University of Bern; Archeological Service Bern) - Hafner, Albert (University of Bern)

Abstract format: Oral

Numerous lakeside settlements from the Neolithic and the Bronze Age from the Alpine foothills were added to the UNESCO World Heritage List in 2011. Thanks to the excellent preservation conditions and the many available dendrochronological chronologies, settlement developments can often be determined with annual accuracy. The lakeshore settlement of Muntelier, Platzbünden, with over 4500 documented wooden piles, is perfect for reconstructing the development of a lakeshore settlement at the end of the 4th century. Although the settlement was already excavated between 1978 and 1982 and the dendrochronological evaluation was completed in 1999, there have been hardly any reliable published reconstructions of the buildings and the settlement development. As part of the SNSF MOVE project (Mobility, Vulnerability and Resilience of Middle European Neolithic Societies at the end of the 4th millennium BC), the complete dendrochronological data between 3229 BC and 3110 BC was re-evaluated and allowed to distinguish several settlement phases.

13 TECHNICAL INNOVATION AND SUSTAINABILITY OF NEOLITHIC STONE AXE PRODUCTION IN THE WATERLOGGED SITE OF MUNTELIER-PLATZBÜNDEN (SWITZERLAND)

Abstract author(s): Scherrer, Adrian - Heitz, Caroline - Hafner, Albert (Institute of Archaeological Sciences, University of Bern)

Abstract format: Oral

The extensive excavations in Muntelier-Platzbünden (3229–3110 BC dendro.) at Lake Murten produced one of the largest collections of neolithic stone axe components in the Three-Lake-Region of Western Switzerland, which is known for its many UNESCO World Heritage certified waterlogged pile dwelling sites. The exceptionally large number of stone axe finds, including more than 500 axe heads, 1000 antler sleeves and a few wooden handles allowed for a large scale typological and statistical study into the technical development of these products, which may shed light on questions about neolithic craftsmanship and solutions to technical difficulties as well as provide insight into ideas of parsimony and effort management during the production of these tools.

By contextualizing these finds it can be shown that during the 4th millennium BC, transformations in stone-axe production were driven by technological innovation that targeted a more time efficient production by making smaller axe blades, a greater durability of the wooden shafts by using antler sleeves and a more sustainable raw material management of the latter over time. Furthermore, the fact that unusually large quantities of stone axes and antler sleeves were found at the site of Muntelier-Platzbünden raises the question of another transformation, one of socio-economic nature: the likely emergence of specialized settlement communities.

14 MOBILITY, CONTINUITY AND TRANSFORMATIONS - NEW RESULTS FROM THE NORTHERN ALPINE WETLAND SITES AT LAKE BIEL CH (3400 -2700 BC)

Abstract author(s): Schiess, Delphine - Bolliger, Matthias - Hafner, Albert - Heitz, Caroline (University of Bern)

Abstract format: Oral

The MOVE-project at the University of Bern focuses on settlement interruptions, cultural continuity, and transformations as well as spatial mobility as resilience capacity of lakeshore settlement communities in circum-Alpine region at the end of the 4th M BC. Three sites located in Sutz-Lattrigen, at Lake Biel in western Switzerland are of major importance, “Sutz-Lattrigen, -Neue Station; -Hauptstation Aussen; -Kleine Station”. The dendrochronological data from the three lake shore settlements encompass the so called “Horgen” and “Lüscherz” tyochronological units dating between 3400 and 2700 BC and gives precise information about the duration of the occupations as well as the interruptions between them. For example, the settlement layout of “Neue Station” makes it possible to reconstruct

a horizontal stratigraphy and to separate the material by phase. We are thus able to study the phases independently of each other but also in an interlinked manner to identify similarities and differences between them. Our study deals with ceramics, stone axe blades and deer antler sleeves, as well as flint and textiles, but ceramics lend themselves particularly well to this exercise and can give us indications of changes in terms of pottery production practices. The biggest changes in terms of pottery typology comes after the long interruption of settlement activity between the “Horgen” and “Lüscherz” period. The typological changes are radical, but is this also the case at the technological level? Are the production habits completely different? On what points? Have the modalities in terms of mobility also changed? How is resilience reflected in these changes? These are all questions that this MOVE project seeks to answer.

For more see: MOVE-project – Cultural Transformations and Spatial Mobility as Resilience Capacity of Lakeshore Settlement Communities at the end of the 4th M BC. <https://data.snf.ch/grants/grant/197383>

15 **SPATIAL MOBILITY, CROSS-CULTURAL EXCHANGE, AND THE MEANING OF ORNAMENTED POTTERY FROM LATE NEOLITHIC WETLAND SITES OF THE NORTHERN ALPINE FORELAND**

Abstract author(s): Andriiovych, Marta (Institut für Archäologische Wissenschaften)

Abstract format: Oral

An abundance of Neolithic wetland sites in the northern Alpine Foreland of the second half of the 4th M BCE can be dated to the exact year using dendrochronology thanks to the preservation of wooden architectural remains. Besides organic artefacts, the pottery found at these sites is well preserved. This offers an opportunity to study their regional stylistic diversity and related aspects of mobility and social relations in a high temporal resolution. The ornamentation of pottery might have played an important role as a symbol of attribution to the community and communal forms of social belonging and differentiation. The pottery vessels examined here were usually decorated with scratched or smoothed lines, nails or wooden tools imprints, or embossed ornamentation. However, there is a certain regional variation in the pottery deriving from Lake Zurich, Lake Constance, the Jura Mountains, or Upper Swabia. Furthermore, there are some vessels with an ornamentation pattern that derives from the typical local or regional one. For example, decoration styles of plots consisted of simple rows of one type of ornamentation, mainly in the upper part of the vessel on the rim or the neck. But some of the vessels have an ornamentation that covers most of the surface or is composed of small ‘design pictures’.

Were these pots ‘one-offs’ representing individual creativity? Did they have a special symbolic meaning? Or could they just be seen as an attempt to create a new pottery ornamentation style? Are they non-local vessels that are typical for adjacent regions? Based on such findings, what conclusions could be drawn regarding spatial mobility and social configurations? I will present the first results of these uniquely ornamented pottery vessels and discuss if they should be seen as the phenomenon linking communities that lived in the different respective regions in the northern Alpine Foreland.

16 **“WHAT’S THAT BROWN STUFF?!” – MICROMORPHOLOGICAL OBSERVATIONS AT THE COPPER AGE LAKESHORE SETTLEMENT OF MOOSWINKEL (MONDSEE, UPPER AUSTRIA)**

Abstract author(s): Zambaldi, Maurizio (University of Coimbra, Centre of Studies in Geography and Spatial Planning - CEGOT) - Cereda, Susanna (Institut für Archäologien, Universität Innsbruck) - Dworsky, Cyril - Pohl, Henrik - Seidl da Fonseca, Helena (Kuratorium Pfahlbauten) - Leskovar, Jutta (OÖ Landes-Kultur GmbH, Linz) - Trebsche, Peter (Institut für Archäologien, Universität Innsbruck)

Abstract format: Oral

The “Mondsee Group” belongs to the earliest copper-using horizons in the Attersee-Mondsee region. This region is among the richest for copper objects and casting crucibles in 4th millennium BCE Central Europe. Studies have suggested a provenance of this metal from south-eastern Europe, but its exact origin, as well as the role of the Mondsee Group and the whole Attersee-Mondsee region within the Alpine, Perialpine and Balkan networks, must be further investigated. Since 2015, the Kuratorium Pfahlbauten and the Upper Austrian Provincial Museums have given new impulse to research in this region through a program of underwater excavations and integrated bio- and geoarchaeological investigations at the lakes Mondsee and Attersee.

This paper focuses on one of the most promising archaeological sites recently excavated at lake Mondsee, the Copper Age pile dwelling settlement of Mooswinkel. A sediment core was collected underwater and analyzed through micromorphological observations. Eight undisturbed samples were extracted from the core and used to prepare thin sections, later observed under a petrographic microscope. The studied sediments consist of thick, dark-brown organic layers alternating with thin calcareous lacustrine deposits. The microstratigraphic analysis aims to understand the formation processes of the archaeological site, and to reconstruct the depositional environment and water level fluctuations at the lake. Micromorphological observations led to identifying the biogenic, geogenic and anthropogenic inputs and better characterizing the nature of the organic components preserved within the sediment core. Further-

more, it was possible to correlate some layers with distinct occupational phases, as proposed based on the recovered archaeological record. Ultimately, this approach has led to new insights into the study of the lakeshore settlement of Mooswinkel and helped to correlate the different scales of the investigation conducted at the site.

17 **ARCHAEOBOTANICAL EVALUATION OF CULTURAL LAYERS FROM THE EARLY IRON AGE LAKESHORE SETTLEMENT AT TRAUNKIRCHEN (UPPER AUSTRIA)**

Abstract author(s): Außerlechner, Marlies (Universität Innsbruck, Institut für Archäologien)

Abstract format: Oral

Coaly layers from the Early Iron Age from two sediment cores sampled during underwater prospections in Lake Traunsee at Traunkirchen (Upper Austria, Austria) were analysed archaeobotanically as part of an interdisciplinary research project of the Kuratorium Pfahlbauten, Management Vienna, Austria and the Universität Innsbruck, Institut für Archäologien, Innsbruck, Austria. The aim was to evaluate the presence of plant macro-remains in the layers and provide insights into the local plant food and environment, focusing on carpological remains. Therefore, two cultural layers with a total volume of ca. 270 ml or total weight of 207 g were extracted from the cores. The samples were prepared by using wash-over and wet sieving techniques with mesh widths of 2.0, 1.0, 0.5 and 0.25 mm. The fairly divers charred and uncharred plant macro-remains were preserved well. Cereals such as barley (*Hordeum vulgare*), emmer (*Triticum dicoccum*) and broomcorn millet (*Panicum miliaceum*), and legumes such as probably *Vicia faba* (broad bean) were consumed. Wild fruits and nuts, such as Cornelian cherry (*Cornus mas*), hazel (*Corylus avellana*), wild strawberry (*Fragaria vesca*), sloe (*Prunus spinosa*), rose (*Rosa*), blackberry (*Rubus fruticosus*), raspberry (*R. idaeus*) and black elder (*Sambucus nigra*) were also part of the plant diet, suggesting a local gathering economy. These and other wild plants, for example, fir (*Abies alba*), grey alder (*Alnus incana*), sedges (*Carex*), pondweed (*Potamogeton*), wild marjoram (*Origanum vulgare*), spruce (*Picea abies*), common verbena (*Verbena officinalis*) and horned pondweed (*Zannichellia palustris*), reflect fresh, alkaline and nutrient-rich soils, frequently visited, rich deciduous forests, glades and forest paths, and the littoral zone.

339 **SETTLING WATERSCAPES IN EUROPE II: PREHISTORIC SUBMERGED SITES IN LAKES, BOGS AND RIVERS - PART 2**

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Heitz, Caroline - Hafner, Albert (University of Bern) - Pranckėnaitė, Elena (Klaipėda University) - Piqué, Raquel (Universitat Autònoma de Barcelona) - Dworsky, Cyril (Kuratorium Pfahlbauten)

Session format: Regular session

Prehistoric submerged sites in lakes, bogs and rivers of Europe have been intensively studied for more than 150 years. They mark the beginning of settlement archaeology, and wooden architectural elements could be recognized for the first time. Due to the outstanding preservation under waterlogged conditions, prehistoric submerged sites also stand for the dawn of interdisciplinary archaeological research and the positioning of prehistoric archaeology between the humanities and the natural sciences. The first 'Settling Waterscapes in Europe' session was successfully organized during the EAA 2016 Annual Meeting at Vilnius, Lithuania. The lectures have been published as volume 1 of the 'Open Series in Prehistoric Archaeology' (<https://www.sidestone.com/books/settling-waterscapes-in-europe>). This upcoming session of 2023 can be understood as a follow up discussion that extends and enhances the topic.

Although evidence of submerged prehistoric sites became known early in many regions of Europe, research focused for a long time on the pile dwellings of the Alpine space. These sites have been inscribed as a serial object on the UNESCO World Heritage List in 2011. It is very encouraging that in the last 20 years research on the phenomenon of submerged sites in lakes, bogs and rivers has intensified in numerous European regions. It thus reveals the amazing diversity of adaptations of settlement activities related to inland water bodies.

The session organizers consider it important to present and discuss new data and hypotheses on the evolution of building structures, settlement patterns, and regional chronologies of waterscapes with clusters of submerged sites in Europe. We especially welcome interdisciplinary contributions that address environmental and economical adaptations to flooding, rising water tables, and other hazards associated with living near water.

1 A FLUCTUATING ENVIRONMENT: NEW RESULTS FROM CORE DRILLINGS ON LAND AND UNDER WATER AT TRAUNKIRCHEN, LAKE TRAUNSEE IN UPPER AUSTRIA

Abstract author(s): Seidl da Fonseca, Helena (Kuratorium Pfahlbauten) - Trebsche, Peter - Außenlechner, Marlies - Cereda, Susanna - Staudt, Markus (Institute of Archaeology at University Innsbruck)

Abstract format: Oral

111 from almost 1000 known wetland and underwater sites around the Alps are part of the UNESCO World Heritage “Prehistoric pile dwellings around the Alps”. Among them are settlements from the Neolithic Age (5000 BC) to the Iron Age (500 BC). Iron Age lakeshore settlements are the exception rather than the rule. In Austria, for example, only two such sites are known.

One is located at Lake Traunsee. On a peninsula of the lake are remains of settlements from the Hallstatt period, which protrude from land into the shallow water area. In addition to the settlement remains, graves from the Hallstatt period are also known from the nearby area. Due to the rich grave goods, the settlement was quickly associated with the transport of salt. The topographical location of the settlement suggests this trade, as the Traunsee is connected to Lake Hallstatt by waterways and enables transport via the Traun to the Danube and thus to a wider European area. However, little is known about the settlement structure of this possible trading post.

Since 2020, new investigations have been carried out on Lake Traunsee on behalf of the regional association ARCHEKULT. The University of Innsbruck, in cooperation with the Kuratorium Pfahlbauten, carried out drilling from the land side to the underwater area in Traunkirchen. The boreholes show a massive preservation of cultural layers in the monastery garden and can be detected, in their foothills, down to the shallow water area on the peninsula in Lake Traunsee.

These deposits indicate strong changes in the prehistoric landscape. There is definite evidence that once there was a natural bay in a well-protected area. This shallow bay could have served as a natural harbour and a perfect landing place for boats before it was filled with sediments during the Hallstatt period and virtually disappeared.

2 THE FORGOTTEN ARCHAEOLOGICAL LAKESCAPES OF THE ALPE-ADRIA REGION CARINTHIA, PREHISTORIC PILE-DWELLINGS IN SOUTH-EASTERN AUSTRIA

Abstract author(s): Ries, Marie-Claire (Universität Innsbruck)

Abstract format: Oral

Austria’s province of Carinthia encompasses more than 1200 bodies of water. The landscape has similar natural and cultural features like neighbouring regions of the perialpine zone, where several well-preserved and culturally rich pile-dwelling sites from prehistoric times (Neolithic and Bronze Age) have been investigated. Unfortunately, our cultural knowledge of Carinthia itself, is severely limited. This poorly investigated region represents a missing link for understanding the relationship between the alpine lake-dwellings and parallel developments in south-eastern Europe (the Balkans). Though, recent underwater archaeological surveys aim to re-evaluate the current situation. A newly launched project has taken on the task of achieving a significant contribution by assessing basic site inventories in three study areas. Archaeological remains are recorded systematically via scientific diving, fieldwork campaigns in wetlands and archival research. Preliminary results, including interdisciplinary microarchaeological investigations, which allow a better contextualisation of this important key-region in the pan-European archaeological discourse, are presented in the paper.

3 FILLING OUT THE GAP ON THE MAP: PREHISTORIC PILE-DWELLINGS IN CROATIA

Abstract author(s): Jerbic, Katarina (University of Bern, Institute of Archaeological Sciences)

Abstract format: Oral

European prehistoric pile-dwelling research represents one of the most developed interdisciplinary fields within archaeology. What started in the 19th century with the famous Alpine lake sites later extended both West to Britain and Ireland and Spain and East to the Baltic wetlands, northeastern European riverlands, and in the 21st century to the central Balkan lakes. When all these sites are visualised on a ‘prehistoric map’, it becomes apparent that they spread in clustered formations with gaps in between that are sometimes hundreds of kilometres apart. It wasn’t until recently that the paucity of sites between clusters was explained with different historical backgrounds, political occurrences, and/or regional trends in scientific interest rather than as an accurate picture of prehistoric reality. One of these apparent gaps is visible in Croatia and this paper presents a map of currently known and confirmed and/or potential prehistoric pile-dwelling sites there. It shows that the research history of pile-dwellings goes back to the original ‘Pile-dwelling fever’ times in the late 19th and mid-20th centuries. Back then these discoveries were compared to

Swiss and Italian sites, presented on conferences and even discussed in handwritten correspondence between famous archaeologists. Unfortunately, the interest in the topic faded due to a complex combination of aforementioned reasons but with the 21st century chance discovery in the Northern Adriatic Sea the Croatian pile-dwelling discussion re-emerged. Although the discipline now needs to be significantly developed, especially dendrochronology, with a long and prosperous history of scientific archaeological research and a reputable SCUBA diving culture, Croatia holds a uniquely high potential to develop its prehistoric pile-dwelling research very quickly and effectively. The author's SNSF project on the topic will therefore serve as a means for capacity building and a significant developmental stepping stone towards achieving this goal.

4 UP AND DOWN: LAKE BOLSENA WATER LEVEL VARIATION IN THE BRONZE AGE AND IRON AGE

Abstract author(s): Di Giamberardino, Giulia (University of Rome La Sapienza) - Bulian, Francesca (University of Groningen) - Sevink, Jan (University of Amsterdam) - Maurer, Arnoud (University of Groningen) - Vanzetti, Alessandro (University of Rome La Sapienza) - Alessandri, Luca (University of Groningen) - Barbaro, Barbara (Soprintendenza Archeologia Belle Arti e Paesaggio per la provincia di Viterbo e per l'Etruria Meridionale)

Abstract format: Oral

Lake Bolsena is located in the Bolsena caldera, part of the Vulsini Mountains complex which consists of multiple volcanoes and craters. The lake is now located 305 m above sea level, covers an area of about 114.5 km² and has a maximum depth of 151 m. It is most likely in equilibrium with an aquifer in the pyroclastic permeable rocks that make up the basin and has a natural outlet - the river Marta - that is active all year and drains to the Tyrrhenian Sea.

A range of evidence clearly indicates that in ancient times the lake level was much lower. Starting from the Middle Bronze Age, a series of settlements, including the Gran Carro, were in fact located along the 297m isobath. It is still unclear whether their abandonment was driven directly by rising waters and the associated shift in the lake shoreline or by earlier socioeconomic factors.

To address this issue, several studies were performed on the evolution of the lake shore over the centuries, using the available archaeological data, historical sources and geological information. In this study we analyze a sediment core (Bolsena-1) taken in the lake near the Gran Carro settlement, using mineralogical and geochemical analytical techniques. Our aim is to better understand the lake level fluctuations during the life of the settlement. Statistical analysis (PCA) of the analytical data and archaeobotanical data obtained for the Bolsena-1 core allowed the recognition of four phases of Lake Bolsena water level fluctuation within an overall rising trend: two cycles of raising and submersion, alternating with lowering and relatively dry habitat. The temporal pattern and magnitude of these cycles are compared to earlier published results for the period concerned.

5 DISENTANGLING NATURAL FROM ANTHROPIC SIGNALS IN WOODEN PILES FROM THE EARLY NEOLITHIC SITE OF LA DRAGA (5300-4700 CAL BCE)

Abstract author(s): Domínguez Delmás, Marta (DendroResearch; Autonomous University of Barcelona) - López Bultó, Oriol (Autonomous University of Barcelona) - Gassmann, Patrick (Laboratoire de dendrochronologie de l'Office du patrimoine et de l'archéologie de Neuchâtel) - Piqué Huerta, Raquel (Autonomous University of Barcelona)

Abstract format: Oral

The Early Neolithic pile-dwelling site of La Draga (5300-4700 cal BCE), located by the shore of lake Banyoles in the northeast of the Iberian Peninsula, represents a first-farming occupation in a formerly inhabited region. Excavations carried out in the past 30 years have provided a wealth of wood samples from pile-dwelling structures. Dendrochronological research on 136 piles and planks made of deciduous oak (*Quercus* sp.) has delivered a well-replicated floating tree-ring chronology spanning 265 years, revealing a main construction phase and a minimum occupation period of 28 years in which repairs have been identified. Furthermore, typological differences in the growth rates and the presence of sudden growth reductions in some samples suggest that anthropic activities may have taken place in the area before the settlement. But was it so? Was there a previous settlement nearby that has not yet been discovered, and whose inhabitants' activities started shaping the woodland around Banyoles lake? Or did fluctuations in the water table for example, induce changes in the growth patterns of the oaks around the lake? We have explored these signals embedded in the growth patterns to disentangle whether they were caused by natural events, or respond to anthropic interventions instead. These results are discussed in the context of the region and their significance is assessed within the process of Neolithisation.

6 SUBMERGED SETTLEMENTS OF ALBANIA, NORTH MACEDONIA AND GREECE. INTERMEDIARY REPORT OF THE ARCHAEOLOGICAL RESEARCH IN THE ERC EXPLO PROJECT

Abstract author(s): Hostettler, Marco - Maczkowski, Andrej (University of Bern, Institute of Archaeological Sciences; University of Bern, Oeschger Centre for Climate Change Research) - Reich, Johannes - Bolliger, Matthias (University of Bern, Institute of Archaeological Sciences; University of Bern, Oeschger Centre for Climate Change Research; Archaeological Service of the Canton of Bern) - Francuz, John - Ballmer, Ariane (-) - Tinner, Willy (University of Bern, Institute of Plant Sciences; University of Bern, Oeschger Centre for Climate Change Research) - Kotsakis, Kostas (Aristotle University of Thessaloniki, School of History and Archaeology) - Bogaard, Amy (University of Oxford, School of Archaeology) - Hafner, Albert (University of Bern, Institute of Archaeological Sciences; University of Bern, Oeschger Centre for Climate Change Research)

Abstract format: Oral

In the border triangle of Albania, North Macedonia and Greece are located numerous lakes surrounded by mountains that reach up to 2600 m in altitude. The first waterlogged sites were already discovered in the early 20th century but not intensely investigated. Systematic research of the settlement sites under water and the use of dendrochronological methods to date them has only been applied since 2018. Since then, several waterlogged settlements have been excavated and studied. The new archaeological material and dendrochronological data show that the oldest submerged settlements date to around 5600 BC. More recent phases belong to the middle of the 5th millennium and to the period between 1800 and 800 BC. The presentation gives an overview of the documented sites, their chronology and first models of land use in the research area. The new research contributes to a better understanding of the prehistory of a so far poorly understood, but important region of Europe.

7 SETTLEMENT DYNAMICS AT LAKE OHRID FROM A WETLAND PERSPECTIVE. RESULTS OF THE EXCAVATIONS AT LIN, ALBANIA, 2022-23

Abstract author(s): Hinz, Martin - Brunner, Mirco (Institut für Archäologische Wissenschaften University of Bern) - Anastasi, Adrian (Institute of Archaeology - Academy of Albanological Studies, Tirana) - Anastasi, Kristi (Université Lumière Lyon 2, Laboratoire HiSoMA - Histoire et Sources des Mondes Antiques) - Hafner, Albert (Institut für Archäologische Wissenschaften University of Bern)

Abstract format: Oral

Since 2019, the EXPLO project has been investigating lakeshore settlements in the southern Balkans, specifically around Lake Ohrid. Since 2020, the shore of the lake in the area of the Albanian Lin, near Pogradec, has also been investigated. First with drillings, since last year also with a wetland excavation, which has yielded material of the Middle Neolithic.

In this lecture we would like to present the results of this excavation, which complement the underwater results in an exciting way. Thus, we could probably identify an earlier phase in the area that is no longer part of the lake today. In addition, flood layers as well as an alluvial horizon, which mainly contains material of the later phase, indicate a changing dynamic of lake levels and thus of settlement activity. This seems to have been concentrated further seaward in the later Middle Neolithic. First dendro- and radiocarbon dating confirm these assumptions. Furthermore, this alluvial horizon indicates that the components were formed by rapid, violent events. In addition, ¹⁴C data from 2022 could support the existing chronology for Dunavec, an important site for the Albanian Neolithic. We want to verify and contextualise these results again in the 2023 campaign.

Due to the excellent preservation conditions under water, but also on land, we can document unique finds and features from the excavations. These allow us unique insights into neolithic lakeshore settlements, as we know them so far only from circum-alpine space.

8 THE NEOLITHIC SITE OF DUNAVEC IN THE FOCUS OF NEW RESEARCH

Abstract author(s): Anastasi, Adrian (Centre of Albanological Studies, Albanian Institute of Archaeology) - Brunner, Mirco (Institute of Archaeological Sciences, University of Bern; Oeschger Centre for Climate Change Research, OCCR, University of Bern)

Abstract format: Oral

Dunavec is a prehistoric site, one of the most important in Albania and belongs to the Middle Neolithic. It is located in today's Maliqi field, which was once covered by the lake with the same name, in the territory where the river Devoll joins the river Dunavec.

It was discovered during the drainage works of the area in the mid-sixties of the last century. Archaeological excavations were carried out in two seasons, in 1971 and 1973 by the Institute of Archeology in Tirana. Along with the very rich archaeological material, two clearly separated occupation horizons were also identified. The oldest cultural layer

of the site belonged to a pile-dwelling settlement, while another, more recent layer showed that at a later stage the settlement was built on the ground.

Recent geomorphological, palynological, tectonic and archaeological studies applied to Lake Maliq have highlighted the need for a new interpretation of the Dunavec site. Ongoing research, discoveries, and studies of four new pile-dwelling sites in Lake Ohrid and Lake Prespa, intertwined with new research and interpretation methodologies, have directed the team from the Institute of Archaeology in Tirana to resume research at this site from 2019. New topographic studies and the results of C14 samples taken last year from the trench in the Dunavec River escarpment, which is part of the site's perimeter, are providing additional interesting data.

9 (RE)CONTEXTUALIZING LEGACIES: NEW RESULTS FROM THE STUDY OF THE ARCHITECTURE OF THE NEOLITHIC DISPILIO LAKE SETTLEMENT

Abstract author(s): Giagkoulis, Tryfon - Kotsakis, Kostas (Department of Archaeology, Aristotle University of Thessaloniki) - Maczkowski, Andrej - Francuz, John - Bolliger, Matthias - Hafner, Albert (Institute of Archaeological Sciences, University of Bern)

Abstract format: Oral

The Neolithic lake settlement Dispilio in Lake Kastoria is the only wetland habitation in Greece that was systematically investigated since the 1990s' by the Department of Archaeology of the Aristotle University of Thessaloniki. The outcome of several excavation campaigns forms a rich legacy of archaeological materials reflecting many aspects of the activities of the Neolithic community.

The general chronological framework of the multi-layered diachronic development of the habitation from the mid-6th to the late-3rd mil BC was established by a series of radiocarbon dates. However, until recently the reconstruction of the stratigraphic sequence, the interpretation of concrete concentrations of artifacts, bioarchaeological remains, and building materials, and - above all - their absolute dating, were missing.

The participation of AUTH in the ERC-funded EXPLOR Project provides the necessary framework for developing a state-of-art multidisciplinary approach to these research objectives. The detailed examination of the records, the archive of digital photos, and the excavation plans, combined with critical information deriving from the classification, the stratigraphic and spatial distribution of the settlement's whole vessels have led to the specification of built and open spaces, mainly in the deepest wet archaeological layers.

Moreover, the systematic sampling of structural wood and the dendrochronological analysis of more than 800 samples led to the robust dating of several oak and juniper posts (57th - 53rd centuries BC). The spatial distribution of these dated dendro-groups combined with stratified material concentrations facilitates the recognition of buildings' plans and allows the discussion of certain aspects of Dispilio architecture and its diachronic development.

A. WHEN ARCHAEOLOGY MEETS HYDROLOGY: INVESTIGATING THE ARCHAEOLOGICAL POTENTIAL OF THE JIZERA RIVER THROUGH INTERDISCIPLINARY APPROACHES

Abstract author(s): Machová, Barbora (AU - Institute of Archaeology of the Academy of Sciences of the Czech Republic)

Abstract format: Poster

In the riverbeds and along the banks, we find individual items, archaeological artifacts, but also diverse evidence of activities or entire structures of various origins and ages. However, most of these components can only be identified and interpreted from land with great difficulty. The presented contribution aims to familiarize the reader with a pilot project focused on identifying sites with archaeological potential in the Jizera River. The combination of bathymetry, geophysical prospecting and archaeology allowed us to define the areas of interest, where the river bottom was explored. Based on all available information, we attempted to define the so-called contact zones - places where the aquatic environment intersects with the terrestrial environment. Around 50 such places were defined in the area of the middle and lower flow of the Jizera River. As case studies presented in this contribution, two micro-regions with rich evidence of archaeological sites located close to the water flow were selected.

MEDIEVAL MONASTIC SETTLEMENTS IN THE NORTH: ARCHAEOLOGICAL AND ENVIRONMENTAL STUDIES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Kristjansdottir, Steinunn (University of Iceland) - Walser III, Joe (National Museum of Iceland) - Jakob, Tina - Montgomery, Janet (Durham University) - Sundman, Elin (National Historical Museums, Sweden)

Session format: Regular session

Monastic houses became one of the leading institutions in northern Europe throughout the medieval period. The successful ones, female and male monasteries alike, became well-staffed with both religious and lay members who provided a broad range of social services to their local communities. In them, it was possible to gain education or training as a student or a novice, or even live a comfortable life as a corrodian or temporary lay worker. Some of the monastic houses took care of the sick, the poor, and the elderly, besides providing shelter for occasional travellers and pilgrims. Likewise, monastic houses played an important role in gardening and ran large farms in order to provide their inhabitants with subsistence, ranging from medicines to food. Their miscellaneous manufacturing similarly required ample natural resources.

This session will be associated with MERC, since it deals with matters concerning the diverse ways the medieval monastic settlements in northern Europe synchronized with their environment while faithfully keeping their dedication to their diverse orders. The aim is to discuss the role of the landscape in everyday monastic life and the associated land-use in the long run. The discussion includes the diverse ways the religious houses responded to periods of prosperity and hardship, such as caused by the Plague, famines due to volcanic eruptions, or the cooling climate in the Little Ice Age. With contributions from archaeology, natural sciences, and environmental studies, the session is likely to provide innovative insights into current debates about human/nature coexistence due to epidemics such as Covid-19 or climate change.

ABSTRACTS

1 BETWEEN MAN AND NATURE

Abstract author(s): Kristjansdottir, Steinunn (Department of Archaeology, University of Iceland)

Abstract format: Oral

The project, Between Man and Nature, the Making of Benedictine Communities in Iceland, was launched in May 2022. The aim of it is to investigate the role of the surrounding landscape in everyday monastic life and the associated land-use in the long run with examples taken from two Benedictine settlements in Iceland; the female monastery at Kirkjubæjarklaustur and the male monastery at Þingeyraklaustur. These two monastic houses operated for centuries, but both were closed down due to the Protestant Reformation in the mid-16th century. The main themes of the project focus on 1) The extensive production of textiles and manuscripts within these two settlements, which required ample natural resources. 2) The role of the landscape in everyday life and in engagement with liturgy and prayer, for example through water management and timekeeping. 3) The diet of the religious and lay inhabitants in the monastic houses and its associated land-use. Some recurring questions within these themes concern the ways in which the religious houses responded to periods of hardship, such as caused by the Plague or the Little Ice Age, the significance of gender in their operation, and the diverse ways in which they synchronized with their surrounding environment while faithfully keeping their dedication to the Benedictine customs. In the lecture, an overview will be given on the progress of the project, at the same time as the latest results from it will be presented.

2 NORDIC NOIR: BENEDICTINE LIVING IN THE ENVIRONMENT OF NORTHERN EUROPE

Abstract author(s): Clark, James (University of Exeter)

Abstract format: Oral

Benedictine customs were the first regular form of monastic life to be established in the far north of Europe. They also came to be the most widespread. Of course, the source of Benedictinism lay far to the south in the Italian province of Benevento; although the scale and scope of its influence was most conspicuous further north, still the pattern of life it prescribed was marked by its original southern setting. The schedule of religious observance, the recommended forms of labour, whether cultivation or craftwork, and the regulation of diet, dress and personal hygiene remained an expression of the first, pioneers' response to the climate and natural resources in and around Monte Cassino. How those that chose to follow Benedict, and adopt the rule attributed to him, adapted this form of life to their entirely different environments is not well understood. Discussion among historians has concentrated on the legislative corpus, that is to say, precept rather than practice. Archaeological investigation of the evolution of Benedictine living conditions in northern Europe has been limited by the general loss of sites and any visible material remains. This paper, from the

team responsible for the Rannís-funded project Between Man and Nature, will draw on fresh data connected with the Benedictine colonies in Iceland, to offer a fresh perspective on the interpretation of monastic tradition in the climate and ecology of medieval Europe's outermost northern regions. The challenges and opportunities of the Nordic natural environment may have encouraged and enabled the realisation of the Benedictine vision for the monastery's internal economy. The negotiation between custom and context was perhaps most pronounced not in the nature of the Nordic lands but in their social dynamics, where structures and cultures of social order, lordship and kinship were set in conflict with the Benedictine concept of *communitas*.

3 **MONKS, MERES AND MIRES: MEDIEVAL LAND USE AND VEGETATION CHANGE AT ÞINGEYRAR (ÞINGEYRAKLAUSTUR) AND HELGAFELL (HELGAFELLSKLAUSTUR), ICELAND**

Abstract author(s): Riddell, Scott - Erlendsson, Egill (University of Iceland) - Eddudóttir, Sigrún (University of Uppsala; University of Iceland) - Gísladóttir, Guðrún - Kristjánsdóttir, Steinunn (University of Iceland)

Abstract format: Oral

Latin monasticism was a feature of Iceland from the late 11th century but it was not until the 12th century that it became properly established along the lines of such institutions elsewhere in Europe. Here, utilising both palaeoecological data and historical records, the impact of two Icelandic monasteries upon their immediate landholdings are investigated. Palaeoecological data is derived from both wetland and lacustrine sediments with chronologies, for the most part, constructed from known and dated volcanic ash layers present within the sedimentary strata. High resolution pollen sampling in hand with a refined chronology for Þingeyraklaustur allowed for a direct comparison between palaeoecological data i.e. sediment properties and pollen, and the historical record, primarily the *Diplomatarium Íslandicum*. The arrival of the monastery in the landscape is coincident with *Betula* scrub clearance and potentially sheds light upon conflicting historical accounts over its foundation date. A pastoral landscape subsequently evolves, the only setback arising due to the plague epidemics of the 15th century. The chronology for Helgafellsklaustur is less refined but the arrival of the monastery in the landscape in association with an expansion of grazing land is just as clear as that of Þingeyraklaustur. The pollen record also seems to corroborate the minimal impact of plague at Helgafellsklaustur.

4 **BEYOND THE GRAVE: THE POST-MONASTIC RESIDENTS AT ÞINGEYRAKLAUSTUR**

Abstract author(s): Jakob, Tina (Department of Archaeology, Durham University) - Walser, Joe (National Museum of Iceland) - Kristjánsdóttir, Steinunn (University of Iceland) - Montgomery, Janet (Department of Archaeology, Durham University) - Einarsdóttir, Sandra (National Museum of Iceland)

Abstract format: Oral

In the summer of 2021, the grave of Jón Þorleifsson (b. ~1657, d. 1683) was excavated from the cemetery at Þingeyrar. He was the government official presiding over properties belonging to the former monastery at Þingeyraklaustur, known as a *klausturhaldari*. Just 26 years old at the time of his death, he was buried with remarkable grave goods and items of clothing, including a golden signet-ring, ornate silver-thread adorned hat, and a psalm book. Aside from the objects, cranial fragments, several teeth, and even brain tissue were recovered from the burial. Although the skeletal remains were in poor condition, these were preserved, possibly due to their proximity with the silver thread used to decorate the hat. Two well-preserved teeth were sampled for isotope analyses and future ancient DNA analyses. In the research presented here, we discuss the results of multi-isotope analyses and the information revealed about his diet, geographic provenance, and health. Furthermore, we provide a detailed review of his occupation and the objects he was buried with as contextualized within post-Reformation Iceland. As will be discussed, the grave and written sources about Jón Þorleifsson's life and death may even provide perspective on the altered responsibilities of the *klausturhaldari* vs. the abbots who previously served as governors of their monastic houses. At the same time, the supposed distinction of secular and sacred spheres that were introduced with the Reformation and the Enlightenment is discussed in the light of this remarkable grave.

5 **KIRKJUBÆJARKLAUSTUR - A BIOGRAPHY OF PLACE**

Abstract author(s): Hannesdóttir, Sigrún (University of Iceland)

Abstract format: Oral

The importance of landscape has long been recognized within monastic studies, both as an economic and spiritual resource; land management was not only necessary to sustain the monastic community, but was also central to religious life and work. Moreover, former monastic sites continue to influence local narratives to the present day. This paper focuses on the surrounding landscape of a single monastic site, that is Kirkjubæjarklaustur (S-Iceland), one of the two female monasteries established in Medieval Iceland. Through written sources, legends and place names the aim of the paper is to reconstruct the biography of the landscape from before the founding of the monastery to modern days. In particular, the paper considers how the perceived sacredness of the site of Kirkjubæjarklaustur may have been shaped

by stories of Christian settlers prior to the monastic foundation, and how the monastic memory informed the way in which the landscape was experienced after the Reformation and beyond.

6 MONASTIC BEASTS - THE ANIMAL BONES FROM SKRIÐUKLAUSTUR

Abstract author(s): Benkert, Helene (University of Iceland)

Abstract format: Oral

Between the 12th and 16th century, Iceland became home to a number of Christian monasteries, founded by the Benedictine and Augustinian Orders. The island's geomorphology and volcanic activity must have had some impact on people's lives and perhaps inspired a unique interpretation of monasticism. Zooarchaeology is well-placed to provide insights into how people lived at and managed monasteries in the Middle Ages, from daily diet to mobility and animal husbandry but also trade and crafts. It can also help understand the relationship between man and nature

The abandoned monastery at Skriðuklaustur was excavated between 2002 and 2012. Amongst other finds, a large number of animal remains have been found at the site, bearing witness to the daily lives of the monks and other inhabitants of the monastery. This paper will present preliminary findings from the zooarchaeological evidence excavated at Skriðuklaustur between 2008 and 2012. It is part of the project 'Between Man and Nature – The Making of Benedictine Communities in Medieval Iceland' led by Steinunn Kristjánsdóttir.

345 STABLE ISOTOPE ANALYSIS OF ARCHAEOBOTANICAL REMAINS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Gröcke, Darren (Durham University) - Bishop, Rosie (Arkeologisk Museum, Universitetet i Stavanger) - Styring, Amy (University of Oxford) - Szpak, Paul (Trent University)

Session format: Regular session

Understanding the ancient diet of humans and animals using stable isotope analysis (e.g., carbon, nitrogen, sulphur) fundamentally requires knowledge of the baseline ecology. However, many archaeological studies using stable isotope analysis primarily focus on animals and humans. Stable isotope analysis of archaeobotanical remains is becoming more popular, but there is still a long way to go before a complete picture of the environmental, ecological and social interaction between flora and fauna is constructed. Currently, nitrogen isotopes in cereals and pulses have been shown to relate to soil amendment strategies, such as manuring and bio-fertilisation. Strategies like these will elevate the baseline nitrogen isotope value and impact reconstructions of palaeodiet if such ^{15}N -enrichment is not taken into account. Carbon isotope values from cereals primarily relates to water use efficiency/availability and can therefore provide information on watering/irrigation practices. On the other hand, sulphur isotope analysis of modern plants has not been methodically investigated and thus, our interpretation of ancient sulphur isotopes is uncertain. We encourage researchers conducting stable isotope analysis of modern and archaeological plants to attend and present their findings: whether their study represents a modern plot experiment, or a case study from an archaeological site. We particularly invite researchers who are analysing both archaeobotanical and zooarchaeological remains for stable isotope analysis to constrain and understand ecological base levels.

ABSTRACTS

1 A CALL FOR ETHICAL BEST PRACTICE IN ARCHAEOBOTANICAL ISOTOPIC ANALYSIS

Abstract author(s): Stroud, Elizabeth (University of Oxford)

Abstract format: Oral

Isotopic analysis of archaeobotanical remains has grown over the past 20 years, with the method now a common tool for investigating cultivation conditions of past crops, and human/animal dietary inputs. This growth in use has stimulated investigation into the impact of contamination, charring temperature and sampling size on isotopic values. However, we are still at the cusp of fully understanding these fundamental topics. This raises the questions: has the growth in archaeobotanical isotopic analysis outstripped consideration of best ethical practice and just how ethical is archaeobotanical isotopic analysis, given its destructive nature?

Isotopic analysis of archaeobotanical remains is a destructive process, and unlike its archaeozoological or osteological counterparts, in most cases, all of the seed is lost or altered in the process. Literature from the last 20 years was reviewed to understand how archaeobotanical items were documented prior to destruction, the accessibility to such documentation, and the proportion of the assemblage destroyed. Such research indicates that more consideration is needed regarding the destructive nature of archaeobotanical isotopic analysis within published papers. Explicit stating of the recording steps employed, and the publishing of such records, is needed to future proof current and past archaeobotanical isotopic analyses. Furthermore, sampling strategies need to ensure material is preserved for future

generations, given the rapid development in technology and our developing understanding of factors influencing the isotopic values of plant remains.

2 THE CONTRIBUTION OF C4 PLANT STABLE ISOTOPE ANALYSIS FOR RECONSTRUCTING PAST WATER MANAGEMENT IN DRYLANDS

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Abstract format: Oral

Plant remains from archaeological sites are the most direct evidence of ancient cultivation practices and they allow us to understand how agricultural systems changed over time according to climatic and environmental variations. In arid environment, C4 plants like millets are widespread as their physiology makes them tolerant to drought. Nevertheless, the sensibility of these crops to water availability is not well understood, with the general assumption that the isotopic values do not vary much under different hydrological conditions. Within the framework of the ERC-Stg project RAINDROPS, we investigated the isotopic variability of C4 plants by combining data from experimental crops, grown under controlled hydric conditions, with data from plants cultivated according to Traditional Ecological Knowledge and where the environmental factors are known but not controlled. We analyzed carbon and nitrogen stable isotope values of grains of two C4 species, pearl millet (*Pennisetum glaucum*) and sorghum (*Sorghum bicolor*). The results obtained from the experimental fields show that sorghum is more sensitive to irrigation than pearl millet. This is likely due to their different physiology, as they belong to two different C4 subtypes (NADP-ME and NAD-ME). The results obtained from the ethnographical fields show more varied data for both $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$, implying different agricultural traditional systems. The combination of these two datasets allowed us to create a model to correctly interpret the stable isotope values obtained from archaeological remains from sites located in dryland areas, namely from Sudan, South Africa, Pakistan and Egypt. This will shed light on water management and land use practices in the past and inform the design of historically-grounded models for sustainable crop management in the future.

3 INFERRING MILLET FARMING IN THE IBERIAN PENINSULA BY COMPARING STABLE ISOTOPES FROM EXPERIMENTAL PLOTS AND THE ARCHAEOLOGICAL RECORD

Abstract author(s): Teira-Brión, Andrés - Stroud, Elizabeth (University of Oxford) - Ordás-López, Bernardo (Misión Biológica de Galicia) - Alonso, Natàlia (Universitat de Lleida) - Montes-Moya, Eva (Instituto de Investigación en Arqueología Ibérica, Universidad de Jaén) - Pérez-Jordà, Guillem (Universitat de València) - Tereso, João (CIBIO-INO/BIOPOLIS; University of Porto) - Charles, Michael - Bogaard, Amy (University of Oxford)

Abstract format: Oral

The current keen interest in millets for sustainable food production in the drylands of Africa and Asia contrasts with the great diversity of environments in which they have been grown since ancient times. The way millets have evolved in a wide variety of agrosystems over time has been conditioned by bioclimatic and social factors that are highly diverse from those in their domestication regions. In the European continent, broomcorn and foxtail millet were usually spring crops that takes advantage of the lower rainfall and higher insolation of the summer season. In recent years, several experiments have focused on learning how carbon and nitrogen isotopes behave in millets from studies conducted in experimental fields, in traditional crops or in greenhouses under controlled growing conditions, gaining new insights for understanding ancient agriculture.

In this study we present the results obtained from the design of experimental plots with different fertilisation treatments (manure, mineral, ash and unmanured) at three different growing calendars – including an annual double rotation with another cereal (rye) – to address the variability of the isotopic composition of carbon, nitrogen, and sulphur in response to trophic shifts driven by human practices and weather and soil conditions. The data obtained is compared with the analysis of archaeobotanical samples from the 13th century BC to the 14th century AD to address similarities and differences with past broomcorn and foxtail millet growing in the Iberian Peninsula.

4 STABLE CARBON AND NITROGEN ISOTOPE ANALYSIS AND FUNCTIONAL WEED ECOLOGY AS POTENTIAL APPROACHES FOR DISTINGUISHING PADDY AND DRY RICE AGROSYSTEMS

Abstract author(s): Wu, Rubi (School of Archaeology, University of Oxford) - Belfield, Eric (Department of Biology, University of Oxford) - Dong, Yu (Institute of Cultural Heritage, Shandong University) - Feng, Shangzong (Agricultural Technology Centre, Linyi Municipal Bureau of Agriculture and Rural Affairs) - Harberd, Nicholas (Department of Biology, University of Oxford) - Hodgson, John (Department of Archaeology, University of Sheffield) - Kikuchi, Yukiko (Paleo Labo Co., Ltd) - Nasu, Hiroo (Center for Fundamental Education, Okayama University of Science) - Yang, Fan (Archaeology Lab and Preservation Research Institute, China National Centre for Archaeology) - Bogaard, Amy (School of Archaeology, University of Oxford)

Abstract format: Oral

Previous work has shown that stable isotope analysis and functional weed ecology of cereal grains are useful in combination for characterizing crop growing conditions in Europe and West Asia. Rice, grown traditionally under a range of agrosystems from deep water to upland, is an important cereal crop in East, South and Southeast Asia from prehistory until today. The aim of the present study was to test whether the stable carbon and nitrogen isotope analysis of rice grains and functional traits of associated arable weeds can provide complementary lines of evidence for differentiating ecosystems of paddy rice and dry rice. Both glasshouse pot experiment and field experiments were conducted to test the potential of stable carbon and nitrogen isotope analysis. Three heritage and four modern accessions were cultivated under various watering conditions in the glasshouse at the Department of Biology (previously Department of Plant Sciences), Oxford. The results show that paddy conditions are associated with lower $\delta^{13}\text{C}$ values of heritage rice grains compared with saturated soil conditions, but with a variable effect on faster growing modern varieties. Waterlogged conditions in general increase the $\delta^{15}\text{N}$ values of rice grains but the effect is not consistent among accessions. Meanwhile, field experiments in Shanghai and Shandong, China similarly show a significant negative effect of paddy versus dry conditions on the $\delta^{13}\text{C}$ values of rice grains. Turning to functional weed ecology, fieldwork in Japan provides species composition and functional traits of rice weeds in experimental paddy fields. Results indicate that paddy plots in Japan are readily distinguished from dryland W Eurasian cereal systems on the basis of functional traits. Overall, this study indicates that $\delta^{13}\text{C}$ values and functional ecology are useful for distinguishing paddy and dry rice, and thus are promising for archaeobotanical application.

5 RECONSTRUCTING THE OPENNESS OF PREHISTORIC WOODLANDS USING STABLE CARBON ISOTOPE VALUES OF HAZELNUTS

Abstract author(s): Styring, Amy (University of Oxford) - Jirdén, Elin (Lund University) - Lagerås, Per (The Archaeologists, National Historical Museums, Lund) - Larsson, Mikael - Sjöström, Arne - Ljung, Karl (Lund University)

Abstract format: Oral

Hazel (*Corylus avellana*) has been abundant in the vegetation of southern Scandinavia since its first occurrence in the early Holocene and has provided food and materials for humans ever since. Pollen analyses show that hazel covered as much as 30% of the land and has been continuously present in the landscape. But how hazel grew and how dense woodlands were is still not fully known.

Here we use stable carbon isotope values of hazelnut shells to infer woodland openness based on the premise of the “canopy effect”. It is well established that plants growing in dense, shaded forests have lower carbon isotope values than plants growing in open areas. By measuring carbon isotope values in hazelnuts collected from bushes growing in different levels of light intensity, we show that the canopy effect is preserved in hazelnuts and that their carbon isotope values can potentially be used to infer woodland openness. We apply the method to hazelnuts recovered from sites dated to between the Mesolithic and Medieval period (c. 8000 BCE to 1300 CE) in southern Sweden. Our results show that the nuts dated to the Mesolithic were harvested from hazels growing in semi-open settings. Nuts from subsequent periods were harvested from progressively more open settings. Given the abundance of hazelnuts recovered from many archaeological contexts, this method can potentially be used to reconstruct changes in forest openness during the Holocene and explore the impact of humans on their environment.

6 BUILDING UP A REFERENCE COLLECTION OF CEREAL C AND N STABLE ISOTOPE DATA FROM THE NW MEDITERRANEAN

Abstract author(s): Antolin, Ferran (Natural Sciences Division, German Archaeological Institute; IPNA/IPAS, University of Basel) - Gerling, Claudia (DUW & DAW, University of Basel) - Martínez-Grau, Héctor (IPNA/IPAS, Universität Basel) - Soteras, Raul (Natural Sciences Division, German Archaeological Institute) - Pratdesaba, Albert (Museu Arqueològic de l'Esquerda) - Jaggi, Madalina (ETH Zurich) - Bernasconi, Stefano (Earth Sciences, ETH Zurich)

Abstract format: Oral

Within the framework of the SNSF-funded AgriChange project (www.agrichange.duw.unibas.ch), several hundreds of grains coming from different archaeological sites dated to the Neolithic period (5900-2300 BC) have been selected for C and N stable isotope analysis with the goal of reconstructing crop management strategies among early farmers in the NW Mediterranean region.

Comparative data exist from the broader Mediterranean context but not from this region. With the purpose of improving this methodological aspect experimentally grown crops from the Archaeological Museum of l'Esquerda (Roda de Ter, Barcelona) were obtained. The museum has had a long-term running experimental project where different crops have been sown, the local climatic conditions have been recorded, as well as the sowing season. These crops were not manured and hence the nitrogen isotope values obtained should give us a baseline for non-manured cereals in the area. Samples of spring- and autumn-sown rye and emmer, autumn-sown einkorn, and spring-sown spelt, both from chaff and grain, were measured at the Department of Earth Sciences of the ETH Zurich.

The results will be discussed considering the reference precipitation data, the sowing season and the type of material analysed (chaff or grain) and compared to published and available experimental analyses performed in other regions.

7 ADAPTATION AND RESILIENCE OF CEREAL CULTIVATION STRATEGIES IN NEOLITHIC SCOTLAND

Abstract author(s): Bishop, Rosie (University of Stavanger) - Gröcke, Darren (Durham University) - Thomas, Antonia - Lee, Daniel (University of the Highlands and Islands) - Church, Mike (Durham University)

Abstract format: Oral

The Neolithic settlement at the Braes of Ha'Breck (c. 3300-2900 cal BC) in Orkney, Scotland, has produced the largest cereal assemblage from Neolithic Britain, providing exceptional evidence for the nature of Neolithic farming. Underlying a series of later floor deposits within a stone-built structure was a thick, dense layer of carbonized grain. The deposit was sealed and spread across the entire floor-levels of the structure, and may represent the remains of a single crop stored within the structure prior to a fire. The scale and density of this deposit was apparent on excavation, with hundreds of thousands of charred cereal grains visible to the naked eye. The assemblage contrasts with other Neolithic archaeobotanical samples from Britain, which mainly contain sparse crop remains. The marginal environmental setting of the site (on a tiny island, approximately 3.2 km from Mainland Orkney) would have placed arable cultivation at the limits of viability, and the site therefore provides key evidence for understanding Neolithic farming adaptations in the North. The archaeobotanical remains, and the carbon and nitrogen stable isotope composition, have been analysed spatially in a grid across the house floor to investigate if variation in crop growing conditions and storage in the house can be identified. This paper will consider this evidence, together with new crop stable isotope evidence from several other major Neolithic cereal assemblages in Scotland.

8 ONE YEAR'S CROP? CHARRED CEREAL GRAIN $\delta^{13}\text{C}$ AND $\delta^{15}\text{N}$ RESULTS FROM THE EARLY NEOLITHIC ASSEMBLAGE AT HOUSE VII.2-3, SLATINA, BULGARIA

Abstract author(s): Blanz, Magdalena (Vienna Institute for Archaeological Science - VIAS, University of Vienna; Human Evolution and Archaeological Sciences - HEAS, University of Vienna) - Marinova, Elena (Baden-Württemberg State Office for Cultural Heritage) - Takarova, Desislava - Nikolov, Vassil (National Institute of Archaeology and Museum, Bulgarian Academy of Sciences) - Ivanova, Maria (Vienna Institute for Archaeological Science - VIAS, University of Vienna; Human Evolution and Archaeological Sciences - HEAS, University of Vienna)

Abstract format: Oral

At the excavation of the Neolithic settlement site of Slatina in Sofia, Bulgaria, multiple grain storages were found in the burnt remains of a 147 m², three-roomed building (House VII.2-3), likely occupied by three related nuclear families. The house was destroyed in one single event of intense conflagration, which led to the preservation of a substantial archaeobotanical assemblage. Multiple accumulations of cereal grains suggest that several individual grain storage containers were present in the different rooms, some filled with a mixture of wheats, and some with barley.

Due to the single conflagration event, the cereal accumulations likely derive from the same year (or very few years), lowering the potential of interannual environmental variability affecting this study.

Samples for isotope ratio analysis were selected from five of the cereal storages: two containing barley and three containing wheats (einkorn, emmer, free threshing wheat, and new type glume wheat; each species analysed separately). Each sample contained 15-20 grains. The samples were pretreated (0.5M HCl), ball milled and analysed for $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$.

The stable isotope ratio results appear to cluster in $\delta^{15}\text{N}$ not by cereal species, but by storage container and room in the building. Since burning temperature and duration affects $\delta^{15}\text{N}$ values in charred cereals, comparisons to present-day charring experiments (from the literature) were made to ascertain whether the observed stable isotope ratio differences between cereal storage containers are due to different burning conditions, or in vivo differences in $\delta^{15}\text{N}$ prior to burning. If the latter, this would indicate wheat mixtures being grown on different fields, fertilised to differing extents, and stored separately, with fields possibly belonging to different households.

9 STABLE ISOTOPES ANALYSIS ON PERENNIAL PLANTS: CHALLENGES AND POSSIBILITIES

Abstract author(s): Joka, Karolina (Adam Mickiewicz University)

Abstract format: Oral

As the first known long-term investments, perennial fruit plants such as olives, figs, dates and grapes acted as a trigger for the development of land ownership rights and had far reaching consequences for the socio-economic developments leading to the emergence of early urban societies. Hence, the study of their domestication and cultivation offers unprecedented heuristic potential for the investigation of the early complex societies, which remains largely unexplored to date.

The paper will investigate an impact of manuring and watering on the efficiency of cultivation of perennial plants at the Early Bronze site at Tel Qedesh, Israel. Preliminary stable carbon ($\delta^{13}\text{C}$) and nitrogen ($\delta^{15}\text{N}$) isotope data from olives (*Olea europea*) and grapes (*Vitis vinifera*) will be presented. The paper will also address three major methodological issues pertaining to this kind of analysis: (i) the applicability of the method of stable isotope analysis of annually grown plants for the study of perennially grown plants, (ii) developing the research protocol enabling the application of ^{15}N and ^{13}C stable isotopes for studies of perennial crop cultivation practices, and (iii) the usefulness of written accounts (both ancient and modern) pertaining to perennial cultivation from various areas of south-west Asia and the Mediterranean basin for the interpretation of perennial cultivation in the past.

10 NEW INSIGHTS INTO IRON AGE AEGEAN AGRICULTURE THROUGH A COMBINED STABLE ISOTOPE ANALYSIS AND 3D GEOMETRIC MODERN MORPHOMETRICS APPROACH

Abstract author(s): Diffey, Charlotte - Orengo, Hector (Institut Català d'Arqueologia Clàssica - ICAC) - Styring, Amy (University of Oxford) - Livarda, Alexandra (Institut Català d'Arqueologia Clàssica - ICAC)

Abstract format: Oral

The period spanning the end of the Late Bronze Age and the beginning of the Early Iron Age saw significant change throughout the Aegean, with the collapse of palatial societies in the south, the decline of population groups and the proliferation of new socio-political organizations. The causes of these changes have been heavily debated but appear likely to have been instigated by increasingly arid environmental conditions among other factors. These changes have led to suggestions that agriculture underwent a similar transformation, as the large-scale integrated agro-pastoral systems of the LBA were largely abandoned and farmers turned to a more pastoral economy. This view has been thoroughly critiqued, but the nature of agricultural management during this period has been understudied by comparison with other periods, partly due to the relatively few primary archaeobotanical assemblages available.

This paper will contribute to filling this research gap by providing new data from the northern part of the Aegean and in particular from the site of Methone, one of the earliest Greek colonies in northern Greece founded at around 733/2 BCE. Excavations at Methone revealed continuous occupation over a long period that both preceded its foundation as a colony and extends to the beginning of the Roman period. Rigorous archaeobotanical sampling has yielded a large assemblage that adds significant new information for the Iron Age period. This paper presents primary archaeobotanical analysis combined with targeted stable isotope determinations and a newly developed 3D Geometric Modern Morphometrics methodology to infer specific crop management strategies and ultimately a fresh approach to the Iron Age agricultural economy.

SOWING THE SEEDS OF EMPIRE: A STABLE ISOTOPIC INVESTIGATION OF XIONGNU AGRICULTURAL PRACTICE

Abstract author(s): Carolus, Christina - Honeychurch, William (Yale University) - Wright, Joshua (University of Aberdeen) - Amartuvshin, Chunag (National University of Mongolia)

Abstract format: Oral

The Late Iron Age of Mongolia (c. 250 BC-150 AD), also known as the Xiongnu Period, marked the genesis of eastern Eurasia's first pastoral nomadic state and was a particularly transformative time in the history of the eastern Eurasian steppe. Intensive study of the dimensions of sociopolitical, technological, subsistence, and material cultural transformation associated with the emergence of this state has thus been a focal point of Eurasian steppe archaeological research for the past two decades. Recent research posits a complex and diversified steppe political culture whose success may have been based in flexible agropastoral practices. However, a complete picture of Xiongnu foodways and the food production practices underpinning these broad transformations remains elusive. The nature of the arrival, significance, and diversity of agricultural products—namely foreign cereal products—in Xiongnu foodways is especially unclear despite its noted impact. This paper presents an overview of archaeobotanical, stable isotopic, and archaeogenetic evidence for eastern steppe populations' relationships to agricultural practices and products prior to and during the Xiongnu Period. It then reports preliminary results of the first ever formal macrobotanical and stable isotopic analysis ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) of a locally produced economic crop assemblage recovered in Mongolia from this period. These data are integrated and compared to previously published data from contemporaneous local human and faunal populations in order to assess the nature and complexity of Xiongnu agricultural practice in northern Mongolian ecoregions. Results are drawn together to temporally and spatially situate Mongolian participation within the broader prehistory of the trans-Eurasian crop exchange for the first time.

A. EXPLORING FLOODPLAIN AGRICULTURE IN PREHISTORY USING SULFUR ISOTOPES

Abstract author(s): Wexler, Sarah - Reade, Hazel (Institute of Archaeology, University College London) - Read, Daniel (UK CEH Wallingford) - Bottrell, Simon (School of Earth and Environment, Leeds University) - Fremondeau, Delphine (Institute of Archaeology, University College London) - Pallett, Denise (UK CEH Wallingford) - Stevens, Rhiannon (Institute of Archaeology, University College London)

Abstract format: Poster

Here we present our ongoing controlled plant growth experiments that are targeted at improving interpretations of ancient plant (and animal) sulfur isotope values. In particular, we are exploring the potential of archaeological sulfur isotopes as a new tool for exploring the hydrological conditions under which agricultural production was taking place. The relationship between naturally occurring irrigation and the development of intentionally manipulated water resources during the development of agriculture is intriguing and fundamental to our understanding of the development of early crop cultivation. Floodplains may have provided an adventitious stepping stone in the gradual shift from hunter-gatherer practises to the development of settlements where crop cultivation and animal management were used. Early crop cultivation on floodplain soils would have benefitted from periodic waterlogging which provides irrigation and brings in nutrients, as well as from rich floodplain grassland which could be used for grazing and foddering.

So far sulfur isotopic composition (^{34}S : ^{32}S) has primarily been used to infer ancient human and animal movement and resource use due to the imprint of local geology and proximity to the coast on soil d^{34}S which is transferred to plants, as well as isotopically heavy marine sulfur in marine resources. However, in a modern context plant sulfur isotope values can be influenced by changing hydrological conditions. In anaerobic environments including saturated floodplain soils, microbially driven dissimilatory sulfate reduction results in a large isotopic offset that may be passed onto plants grown in the saturated soils or grown soon after floodwaters recede. Through our controlled growth experiments, we aim to further our understanding of the impact of waterlogging (both timing and duration) on plant sulfur isotope values. Our results may enable sulfur isotopes to be used to explore water management strategies in the past, particularly in relation to seasonal floodwater agriculture and wetland agriculture.

B. CARBON AND NITROGEN STABLE ISOTOPE ANALYSIS ON CHARRED ARCHAEBOTANICAL REMAINS: INVESTIGATING THE DIET OF THE PAST-POPULATIONS OF SOUTHERN FRANCE

Abstract author(s): Gaveriaux, Fanny (Independent Researcher) - Laurent, Bouby (Institut des Sciences de l'Évolution - ISEM, Université de Montpellier, CNRS, EPHE, IRD, 34000) - Goude, Gwenaëlle (CNRS, Aix Marseille Université, Ministère de la Culture, LAMPEA, MMSH)

Abstract format: Poster

The use of carbon and nitrogen stable isotope analyses on human and animal bones contributed over the last decades to the better comprehension of diet and subsistence strategies of ancient inhabitants of Southern France. Although they represented a part of the alimentation of these past populations, plants were rarely taken into consideration for

the diet reconstructions based on stable isotope analyses. This could have led not only to an underestimation of the importance of the vegetal resources in the human past alimentation but also to misinterpretations of the data. Indeed, animal bones are usually used to infer the local environmental baseline and plants are considered mainly through a broad range of values coming from modern specimens. However, several studies stressed the impact of the local environment and climate, as well as anthropic practices on the stable isotope ratios of a plant, making it essential to include them to this type of study. As a matter of fact, numerous of these archaeological sites provided archaeobotanical seeds and fruits, sometimes in large quantities, beside human and animal remains. This study aims to shed a new light on the previous diet reconstructions by integrating carbon and nitrogen stable isotope analyses done on charred barley, emmer and millet grains as well as acorns originating from archaeological sites situated in southern France and dated from the Neolithic to the Iron Age period. In order to obtain the best representation of the local environment, the archaeobotanical remains are coming from the same archaeological site or as close as possible and are dated from the same period as the human bones. First results obtained for Neolithic populations confirmed that some aspects of the alimentation seemed to have been underestimated or not even considered, such as the consumption of wild resources.

346 **BLAST FROM THE GLASS: PROVENANCE, OCCURRENCE, CORROSION AND PRESERVATION (LATE BRONZE AGE TO PRE-ROMAN TIMES)**

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Oikonomou, Artemios (Science and Technology in Archaeology and Culture Research Center - STARC, The Cyprus Institute; Institute of Nuclear and Particle Physics, NCSR Demokritos; The Department of Conservation of Antiquities and Works of Art, University of West Attica) - Kaparou, Maria (Institute of Nuclear and Particle Physics, NCSR Demokritos) - Smirniou, Melina (University of Lincoln, School of History & Heritage)

Session format: Regular session

Vitreous materials were broadly circulated in the Mediterranean and across Europe throughout late prehistory and history, holding an abundant and ubiquitous presence in burial and settlement contexts. Since the Late Bronze Age onwards, long distance exchange systems evolved, connecting the shores of the Euphrates and Tigris rivers in Mesopotamia and the Nile in Egypt with the Aegean, Europe and the coast of the Baltic and North Seas, establishing a vast network exchanging materials and ideas. At all its ends, as well as at key sites in between, Egyptian and Mesopotamian glass and related materials have been found, inaugurating a dialogue between significant centres of this network.

Archaeological and archaeometric research in recent decades has greatly enhanced our understanding of the production and distribution of vitreous materials across time and space, resulting in a complex, yet fascinating, picture of the socio-economic and cultural aspects underlying vitreous production. Nevertheless, our insight into the technology and provenance of earlier glass artifacts in Europe and geographically related areas, while in expanse, still requires studies aggregating the material culture of the regions involved in this trade and investigating the patterning of vitreous materials in the areas they reached.

Alongside, vitreous materials do suffer a great degree of degradation, with the smaller objects, such as beads and relief plaques, being particularly vulnerable. The degree, extent and nature of this degradation -critically distorting the visual characteristics of the artefacts- affect the way in which the material can be studied and interpreted by archaeologists, conservation scientists and archaeometrists. Thus, the central themes to this session revolve around provenance, occurrence and the role of vitreous materials in the Late Bronze Age towards pre-Roman times in Europe, the Mediterranean, Egypt and the Near East, alongside corrosion and preservation issues.

ABSTRACTS

1 **SCIENCE BEHIND TAXONOMY: DECODING MYCENEAN VITREOUS ARTEFACTS' DEGRADATION**

Abstract author(s): Oikonomou, Artemios (Institute of Nuclear and Particle Physics, NCSR Demokritos; Science and Technology in Archaeology and Culture Research Center - STARC, The Cyprus Institute) - Kaparou, Maria - Karydas, Andreas (Institute of Nuclear and Particle Physics, NCSR Demokritos)

Abstract format: Oral

Vitreous materials suffer a great degree of degradation, with the smaller objects, such as beads and relief plaques, constituting the largest set of artefacts retrieved in earlier contexts, being particularly vulnerable. The degree, extent and nature of this degradation -critically distorting the visual characteristics of the artefacts- affect the way in which the material can be studied and interpreted by researchers. Practically, the final corrosion state of the artefact imposes constraints on its taxonomy, since it has lost the glassy state/glaze and with degradation yielding similar optical effects telling glass apart from faience can prove challenging.

Thus, resolving taxonomy issues is a demanding task not only because of the complex degradation mechanisms which have a direct impact on the visual appearance of the materials and their compositional fingerprint; but also because their physical damage and alterations have led to their frequent misclassification upon retrieval and final storage resulting in further damage, due to mismanagement and, importantly, misleading notions in the archaeological record. For the purpose of this study, a set of vitreous artefacts of different preservation states from Mycenaean contexts in the Aegean have been investigated. A combination of well-established and state-of-the-art scientific methods has been applied in order to analyze, document and identify the specific compositional changes that occur due to degradation mechanisms at different spatial dimensions, within the surface layers. The main aim of this study is to propose firm associations of the analytical data with the observed visual characteristics of the materials and the studied corrosion layers.

Acknowledgements

The project is being realized within the framework of the 3rd Call of the Hellenic Foundation for Research and Innovation (HRFI) to support Postdoctoral Researchers.

2 FIRST EVIDENCE OF VITREOUS MATERIAL PRODUCTION IN THE MIDDLE - EARLY BRONZE AGE OF SOUTH-CENTRAL SARDINIA (ITALY)

Abstract author(s): Gradoli, Maria Giuseppina (Freelance researcher) - De Giudici, Giovanni Battista (Department of Chemical and Geological Sciences, University of Cagliari)

Abstract format: Oral

For the first time in Sardinia, two almost complete glass crucibles, 19 crucible sherds, glass slag, glass powder and a turquoise vitrified bone were identified in situ at the corridor nuraghe Conca e Sa Cresia (1700-1450 cal B.C.) in the South-Central part of the Island. According to its excavators (Holt and Perra 2021) this area, after collapsing, was sealed by its own debris, preserving its stratigraphy. Indeed, throughout the site life span, glass working debris were in association with their raw materials, such as hydrothermal and fluvial rounded quartz pebbles, quartz pestles and granitic querns, animal bones and rare copper fragments.

In order to study their composition, the samples were analyzed by SEM-EDS, Raman and XRD at the Department of Chemical and Geological Sciences of the University of Cagliari.

Under the petrographic microscope, the tronco-conical crucible shows a fabric different from all the other domestic vessels of the site, rich in macro planar voids, channels and vughs produced by adding grog and vegetal material, possibly to counteract thermal shock during use. Its inner part is lined by a 75 µm whitish layer, which analyzed by SEM-EDS was made of glass (quartz, Na and K alkali, Ca and P and Cu oxides).

Additionally, a sub group of the 19 crucible sherds, lined by the same whitish vitreous material, analyzed by SEM-EDS showed quartz grains not melted completely, indicating semi-finished glass.

The glass slag, analyzed by SEM-EDS, colored dark brown, green and blue has chemical composition similar to the other vitreous remains.

Last but not least, at the bottom of a structure closed by a wall, glass porous materials and powder were found abundantly. Analyzed by XRD and SEM-EDS, the powder is made of quartz as well as the whitish porous material, mirroring the presence of a workshop for glass production.

3 CORE-FORMED GLASS VESSELS IN THE EASTERN MEDITERRANEAN. DEFINING THEIR DISTRIBUTION AND CONSUMPTION DURING THE LATE BRONZE AGE

Abstract author(s): Cosyns, Peter - Bretschneider, Joachim (University Ghent)

Abstract format: Oral

In studies on late Bronze Age glass production and consumption, Egypt and Mesopotamia are recognized as the producers of raw glass and generally considered the sole suppliers of glass consumables throughout the Eastern Mediterranean. The distribution of Egyptian and Mesopotamian glass throughout the Aegean world, Cyprus, Anatolia, and the Syro-Palestinian coastal city-states display the intensive long-distance trade between the Eastern Mediterranean Kingdoms during the late Bronze Age. Advanced research on Cypriot material, however, demonstrates this pivotal island discloses important data not to be overlooked when examining the late Bronze Age glass consumption. Being a highly dynamic hub within the Eastern Mediterranean trade network during the 15th-13th centuries BC, the numerous glass objects discovered on the island makes it worth investigating the status of Cyprus with regard to glass production and tackle the continuous debate on the potential presence of secondary glass workshops in Cyprus and elsewhere in the Eastern Mediterranean. This paper discusses the occurrence and use of core-formed glass vessels from late Bronze Age Cypriot contexts to define preliminary considerations on the idiosyncratic consumption of glass vessels in Cyprus and the presence of other glass producing regions outside Egypt and Mesopotamia.

4 GLASS WORKSHOPS IN MYCENAEAN GREECE: IDENTIFICATION, STRUCTURE AND OPERATION

Abstract author(s): Nikita, Kalliopi (Ephorate of Antiquities of East Attica, Hellenic Ministry of Culture)

Abstract format: Oral

What differentiates the Mycenaean glass industry from the Mesopotamian and Egyptian glass industries is the almost exclusive manufacture of jewellery. Despite the standardisation and mass-production of glass ornaments during the flourish of Mycenaean palaces, i.e. LH IIIA-B (14th-13th centuries BC), there are no recognised remains of workshops for glass making whilst specialised glass-working areas are also difficult to define. The aim of this article is to suggest possible models of reconstruction of Mycenaean glass workshops for primary or secondary glass production.

The extant archaeological evidence of excavated palatial buildings on mainland Greece and on Crete - e.g. Mycenae, Tiryns, Midea, Thebes, Knossos - is presented and assessed, namely architectural remains, technical equipment, the nature of raw and waste materials as well as semi-worked and finished glass objects. In addition, references in the Linear B tablets to materials that can be associated with glass working and possibly making are also included in the discussion. Moreover, earlier published and more recent scientific analyses of glass from Mycenaean palatial and non-palatial sites of the Greek mainland are evaluated and used as a further means of workshop identification.

Suggestions are made for workshops of probable glass working and potential glass making in Mycenaean Greece. Models for the structure and operation of the Mycenaean glass industry are proposed as this is set within the technological context of Mycenaean high-temperature and jewellery industries. Finally, models of interaction of the Mycenaean glass industry with its contemporaneous glass industries in the broader area of the Mediterranean are proposed on the basis of the established palatial trade networks necessary for the procurement and exchange of glass raw materials, raw glass and finished glass artefacts.

5 TYPES AND PROVENANCE OF GLASS FROM CENTRAL AND WESTERN BALKANS IN THE PERIOD OF 11TH C. BCE-6TH C. CE

Abstract author(s): Balvanovic, Roman (Vinča Institute of Nuclear Sciences, University of Belgrade)

Abstract format: Oral

We analyzed a large amount of data on glass reported from 11th century B.C.E. to 6th century C.E. contexts from the Balkans. The analysis showed how the compositional types of glass, their geographic distributions, and their provenance changed with time, indicating changing production technologies, sources of raw materials, and patterns of glass trading over the Mediterranean Sea.

In the period 11th-9th c. BCE, glass was produced using plant-ash and mixed-alkali flux. Two types were recognized, low magnesium-high potassium and high-magnesium. Around two-thirds were of Mesopotamian and one-third of Levantine and Egyptian provenance. The era of natron glass production begun in the 8th century. During 8th-6th c. composition is characterized by low alumina, trace elements indicating Egyptian sands. During 5th-1st c. glass is with high alumina, mostly of Egyptian and rest of the Mesopotamian provenance. In the 1st-2nd c. CE, Roman blue-green and colourless glass dominates, more than two-thirds coming from Levant and the rest from Egypt. In the 3rd-4th c. new types appear, such as Foy 3.2, HIMT, and manganese-decolorized glass. The Egyptian provenance increases to above two-thirds and Levantine decrease to below one-third. In the 5th-6th c., yet new type of Foy 2.1 dominates and the provenance is almost exclusively Egypt. Throughout the period of natron dominance there are occasional occurrences of plant-ash glasses in the archaeological record.

It is noteworthy that throughout this long period of one and a half millennium, the raw glass was almost exclusively imported from the Eastern Mediterranean. This strongly supports the hypothesis that the East was not merely the major source of quality raw materials used for glass production, but also of considerable knowledge, the paramount technological and production center of glass industry of the ancient world. The long-lasting imports also testify that long-range sea commercial routes were functioning throughout this period.

6 BEADS FOR BARBARIANS? GREEK AND SCYTHIAN RELATIONS REFLECTED IN VITREOUS BEADS

Abstract author(s): Yatsuk, Oleh (University of Turin) - Kolesnychenko, Anzhelika (Alma Mater Studiorum University of Bologna) - Zadnikov, Stanislav - Shramko, Iryna (V.N. Karazin Kharkiv National University)

Abstract format: Oral

Greek colonisation of the North Pontic region, that started in 7th century BCE, resulted in a range of complex relations with indigenous inhabitants. The Greeks encountered mighty Scythians and were involved in a large-scale exchange of goods. However, it has long been suspected that such exchange facilitated transfer of skills and technologies in a range of organisational forms: from traveling craftsmen to indigenous industries. Artefacts made of vitreous materials were constantly included in the exchange. Analytical techniques applied in archaeometry have

the potential to shed new light on the scheme and mechanisms of the interaction. 28 glass and faience objects (7-5th centuries BCE) were selected from burials, dwellings and industrial facilities of a 'large Scythian hillfort' of Bilsk (central Ukraine). They were subjected to compositional (SEM-EDS, LA-ICP-MS) and structural (OM, SEM-EDS, μ -Raman, μ -XRD) analysis, rendering the crosscheck of the obtained results possible. This work was carried out by a multidisciplinary team of the V.N. Karazin Kharkiv National University (Ukraine), University of Turin, University of Bari Aldo Moro and University of Bologna (all in Italy). Most glass beads were made of soda-lime-silica glass. Similarities with the other sets of coeval beads known from Central Europe and Mediterranean were noticed. The colouring agents demonstrated a striking variability of technological solutions in order to obtain a vivid and diverse palette of colours and tints. Chemical composition data indicate that the Bilsk inhabitants obtained beads from the main glass-making regions of the time. The comparative analysis revealed the role of Greek colonies in the establishment of this far-reaching trade network.

7 THE WEST FOR LAST - RECENT INVESTIGATIONS OF IRON AGE GLASS COMPOSITIONS IN THE IBERIAN PENINSULA

Abstract author(s): Costa, Mafalda - Lončarić, Valentina - Barrulas, Pedro (HERCULES Laboratory - University of Évora) - Mirão, José (HERCULES Laboratory - University of Évora; Department of Geosciences - University of Évora) - Rodríguez González, Esther (Instituto de Arqueología de Mérida - Consejo Superior de Investigaciones Científicas) - Celestino Pérez, Sebastián - Arruda, Ana Margarida (UNIARQ - Archaeological Center of the University of Lisbon)

Abstract format: Oral

Glass beads and pendants constitute part of the material culture disseminated throughout the Mediterranean region and Iberia by the Phoenician-Punic trade network. In the Iberian Peninsula, these Phoenician-Punic glass adornment objects can be found in a wide range of archaeological sites, including in funerary contexts of indigenous populations, indicating their adoption by the local communities. However, there are still questions regarding the source of raw materials or the raw glass in the case of primary or secondary glass production, respectively.

In the present study we are exploring the complexity of the glass found in 6th-5th century BCE Southern Iberian indigenous sites. Glass beads found in the necropolis of Vinha das Calças 4 (Beja, Portugal) are compared to the glass beads and glass working by-products recovered from the Tartesian site of Casas del Turuñuelo (Badajoz, Spain). A multi-analytical approach comprising handheld X-ray fluorescence (h-XRF), variable pressure scanning electron microscope coupled with energy dispersive X-ray spectrometry (VP-SEM-EDS), micro-X-ray diffraction (μ -XRD) and laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS), succeeded in bringing forth new information regarding glass production and exchange in Mediterranean and Iberian world during the Iron Age.

Acknowledgements: This work has been financially supported by the PP-nGLASS project (EXPL/HAR-ARQ/0381/2021) and by the UIDB/04449/2020 and UIDP/04449/2020 projects, which were funded by Fundação para a Ciência e a Tecnologia.

8 IT'S (NOT) ALL BLACK AND WHITE: A MULTI-ANALYTICAL STUDY OF IRON AGE "BLACK" GLASS BEADS FROM PORTUGAL

Abstract author(s): Loncaric, Valentina - Barrulas, Pedro (HERCULES Laboratory, University of Évora) - Arruda, Ana Margarida (UNIARQ - Archaeological Center of the University of Lisbon) - Costa, Mafalda (HERCULES Laboratory, University of Évora)

Abstract format: Oral

Glass artefacts from Iron Age contexts in the Mediterranean are taken as evidence of long-distance trade and exchange networks. In Portuguese assemblages, particularly in littoral areas, glass beads are considered a part of the Phoenician-mediated "orientalising" cultural inputs which include novel forms of commodities, technologies, and organisational structures. However, a more careful consideration of archaeological contexts in which these inputs appear shows specific patterns in adoption of exogenous objects by local communities of Southern Portugal. One interesting example is the phenomenon of "black" glass beads with white decorations, which are known primarily from 6th century BC female burials of Southern Portugal.

Here, the results of an in-depth archaeometric approach to the phenomenon of Iron Age "black" glass beads from Vinha das Calças 4 (Beja, Portugal) are presented in the context of known chemical compositions for pre-Roman glass from Portugal and other sites in the Mediterranean. The research methodology focused on non-destructive and minimally invasive analytical techniques by employing handheld X-ray fluorescence (hXRF), variable pressure scanning electron microscopy coupled with energy dispersive X-ray spectrometry (VP-SEM-EDS), laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) and micro-X-ray diffraction (μ XRD). It was designed to address the issues of bead manufacture, glass colouring and opacifying technology, and raw material provenance/primary glass workshop location. This work therefore augments the traditional typology-based approach to trans-Medi-

terranean trade in Portugal and has broader implications for understanding the networks of supply and demand during the Iron Age.

Acknowledgements: This work has been financially supported by the PP-nGLASS project (EXPL/HAR-ARQ/0381/2021) and by the UIDB/04449/2020 and UIDP/04449/2020 projects, which were funded by Fundação para a Ciência e a Tecnologia.

9 NETWORKS, KNOW-HOW AND SHOW-OFF: WHEN LA TÈNE SOCIETIES BECAME GLASSMAKERS

Abstract author(s): Rolland, Joëlle (Umr 8215 Trajectoires, CNRS; University Paris 1 Panthéon-Sorbonne; LABEX Dynamite)

Abstract format: Oral

At the transition from the Early to the Late Iron Age, in the 5th century BC, European societies invented a new object of their own: the glass bracelet. This discrete technological innovation is in fact indicative of the development of a unique and typically La Tène glassmaking know-how that, remarkably, was not transferred beyond the borders of European La Tène culture. The development of glassmaking in Europe is also a sign of a major change: glass is no longer imported into Europe only as a finished object, but now circulates as a raw material to be processed. The combination of typological, technological and analytical approaches in the studies of La Tène glass and the development of analytical methods provided important new data for reconstructing the networks for the exchange of raw glass, glassmaking skills and the social significance of ornaments. As part of this research, 1745 glass objects found at 59 sites in France and the Czech Republic were recently analysed using the La- ICP-MS method (laser ablation - inductively coupled plasma - mass spectrometry). The analysis of the composition and its comparison with the typology of the ornaments made it possible to identify changes in the exchange networks between Egypt, the Near East and the La Tène Europe and a diachronic evolution of the compositions used by the La Tène glassmakers. The aim of these communications is to present the results of this study and to discuss the role of La Tène glass ornaments, which were made of an exotic, shiny and sonorous material whose accessibility evolved with changes in wealth in La Tène societies.

10 COMPOSITION AND ORIGIN OF EARLY ROMAN POLYCHROME MOSAIC GLASS FROM THE COLLECTIONS OF THE VICTORIA & ALBERT MUSEUM

Abstract author(s): Richards, Liam - Freestone, Ian (UCL Institute of Archaeology) - Burgio, Lucia (V&A South Kensington)

Abstract format: Oral

With the incorporation of Syria-Palestine in 60-80 BCE and Egypt in 30 BCE into the Roman Empire, the Roman glass industry grew to unprecedented levels. Products of this expanding industry include a group of polychrome mosaic bowls and other open vessels, produced by slumping techniques in the preceding Hellenistic Period. Production of these vessels declined dramatically in the first millennium CE due to the rise in popularity of glass-blowing. This class of objects has been found at archaeological sites across the Mediterranean and Europe, but less is known about where the glass used in their manufacture was produced. This study aims to provide a clearer picture of their provenance, movement and the technologies employed to colour and opacify the glass using compositional and structural analysis. 38 cast mosaic vessel fragments from the Victoria & Albert Museum have been analysed for 58 major, minor, and trace elements using LA-ICP-MS in the Wolfson Archaeological Science Laboratories at the UCL Institute of Archaeology. Non-invasive Raman Spectroscopy was carried out on the objects in the Conservation Science Laboratory at the Victoria & Albert Museum to identify opacifiers. Opacification was generally due to compounds of antimony and metallic copper but in several cases high concentrations of tin are present. Principal component and hierarchical cluster analyses were used to treat the chemical data, and three main compositional groups were identified based on the minor and trace elements commonly associated with the glass-making sand. Two groups comprise glass thought to have originated in Egypt and one in Syria-Palestine. Some objects previously attributed to Egypt on the basis of find location and/or typology appear to have been made from Levantine glass, and comparison with well-provenanced mosaic glass excavated in Egypt suggests that these vessels were instead manufactured in Italy or the Levant.

ARCHAEOLOGICAL IDENTITIES. A METHODOLOGICAL TOOLBOX TO APPROACH IDENTITIES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Poigt, Thibaud (Ausonius - University Bordeaux Montaigne; TRACES - University Toulouse Jean Jaurès) - Adroit, Stéphanie - Parachaud, Kévin (CRIHAM - University of Limoges) - Perdiguero, Pascual (University of Alicante)

Session format: Regular session

Identity is a concept continuously mobilised when dealing with archaeological remains and models. Nevertheless, the identity is characterised by a constellation of definitions. In a general sense, it can be understood as the subjective difference – and the mutual recognition of this difference – by two or several individuals (or groups of individuals). Therefore, the identity is above all characterised by abstract discourse, without objective material manifestations.

In such a framework, the archaeological sciences face a paradox dealing with “identity(ies)” with material proxies they select themselves. The archaeological markers used to talk about the identity are nonetheless numerous: languages, funerary practices, tools of the production and consumption, etc. But what evidence exactly brings these archaeological markers about identity? Are we talking about collective identity (ethnic groups, lineages, communities...) or individual identity (gender, social class, function in the society...). Moreover, are these concepts prevailing in ancient societies or just transpositions of our own identity classification in the past?

In this session, we would like to discuss the identity as an archaeological concept and tool, essential to our studies, but also its limitations. We aim to raise a methodological discussion on how to define and question the material culture and its link with archaeological markers. Namely, why and how specific archaeological data brings to talk about identity from a methodological point of view. In a diachronic approach, we want to interrogate the epistemological process that allows us to deal with identity in archaeology. The papers dealing with methodological and conceptual approaches will be given priority over simple case studies. The idea is to encourage speakers to come up with their own proposals, definitions or interrogations about identity, in order to create a benevolent open debate on doubts and methodological questions.

ABSTRACTS

1 THE METHODOLOGICAL PARADOX TO DEAL WITH IDENTITY IN ARCHAEOLOGY. AN INTRODUCTION

Abstract author(s): Parachaud, Kevin (EA 4270 CRIHAM)

Abstract format: Oral

As an introduction to this session, I would like to quickly present a general definition of the concept of Identity. Then, I would explain the paradoxical relation archaeology maintained with it. I speak to a paradox because, epistemologically speaking, archaeology seems to doesn't have the right tools to approach this part of ancient human societies, and yet it is obvious that we speak a lot about Identity in our discipline. This paradox comes from the nature of Identity, which is an absolutely subjective mutual recognition between a « me » or « us » and an « other.s », whereas archaeology studies ancient societies without direct access to the subjective value and mental representations these men could give to their material world.

This presentation would be a good starting point to then have very interesting presentations and discussions about how we can, as archaeologists, methodologically deal with the concept of Identity regarding our material remains.

2 ROCK ART IMAGES AS SYMBOLS OF IDENTITY

Abstract author(s): Ponomareva, Irina (University of Barcelona)

Abstract format: Oral

Rock art played an active role in ethno-cultural processes and the constructions and negotiations of identities. Looking into various rock art traditions in their historical and cultural contexts can reveal how rock art was engaged in building communities and their symbolic boundaries. Identity is a fluid dynamic phenomenon, and instead of constructing rigid entities it is necessary to look at ethnocultural situations, such as (1) continuity, (2) change, and (3) co-existence of two or more different cultures/ traditions/groups. Interestingly, all three situations occur simultaneously which is explicitly present in rock art. In this paper I will answer the question of why rock art is created, why specific styles and traditions emerge, and why changes in rock art occur through the concept of ethno-cultural identities. Previous researchers treated rock art as a passive object, and specific styles and motifs were considered as markers of bounded ethno-cultural groupings. I suggest that the emergence of rock art styles occurs in a situation of major

cultural change, the reasons and dynamics of which may vary. The important factor is that people had to protect their tradition, culture, and well-being in a situation of threat to their ethno-cultural continuity. By protecting continuity, inevitable change in a rock art tradition occurs. It becomes highly important to mark rocks with relevant symbols of identity, thus expressing the belonging to this place and to the line of succession, and those marks remain there for millennia, continuing to structure identities of those who claim their belonging to this place afterward. Thus, symbols of identity need to be threefold – exhibiting connections with the past, expressing aspects of new identity, and being able to be perceived by both those inside the community and outsiders. Therefore, a rock art tradition/style simultaneously features continuity, change, and similarity to other synchronous traditions/ styles.

3 IDENTITIES IN THE NEOLITHIC SOUTH NORWAY – SITUATIONAL AND SCALABLE?

Abstract author(s): Olsen, Dag Erik (Museum of Cultural History, University of Oslo)

Abstract format: Oral

Neolithic identities have been a subject for a long time within Norwegian archaeology but today there is less focus on identity in Stone Age research. There is however an increased interest in methodological and theoretical approaches that focuses on identifying and describing lithic technologies and how they can be related to distinct groups at local or regional levels. In South Norway, this is exemplified by various technologies used by coastal and inland groups that signify both the development of local traditions and intra-regional contact. In this presentation, the focus will be on how identity can be viewed as situational and is “activated” in encounters with other groups with different social traditions. Eastern and Western Norway will be used as an example as the two regions have always been separated by a mountain range and direct contact would not have been frequent. Meetings are likely to have happened in the mountain areas through the seasonal hunting for reindeer, and are situations where identities might have been signalled through the use and sharing of different technologies.

Participation in different regional networks would also have had an impact on developing different local social traditions, but a tendency has been to equate archaeologically constructed cultures as identities and thus masking the variation we can observe in the material culture. There is reason to approach identity as a scalable phenomenon by building our understanding of archaeological culture complexes starting from the local and up to the supra-regional level. It could be argued that for the most part people were unaware of these large “cultures” and that the dynamics of identity best can be explored through discussing “everyday life” with encounters and cultural exchange at a more local level.

4 THE EVOLUTION OF CELTIC IDENTITY ALL ALONG THE IRON AGE

Abstract author(s): ROURE, Réjane (University Paul Valéry Montpellier 3)

Abstract format: Oral

Approaching the identity of the Iron Age populations is particularly delicate. The name of the Celts appears in several ancient texts that may seem difficult to reconcile at first glance. However, these texts could reflect the identity expressed by the Iron Age peoples at different times in their history. Anthropology shows that populations can express their identity more or less strongly, and thus display specific identity markers in a more or less visible and strong manner, particularly according to interactions with other populations. I have hypothesised that this may explain the differences that exist in the ancient sources concerning the Celts, and also the evolution noticed in some material markers as artefacts (metal objects, ceramics). A change in the distribution of one type of artefact, the appearance of some object or practice, should no longer be systematically linked to a change in population, but could rather be integrated into a reflection on the identity strategy of the populations that choose to wear this attribute, to integrate themselves into this group or the other, to claim their belonging to it, whether it is new or old. Identity is always a behavior and a dynamic thing. After a few theoretical reminders on identity, I will present how the rise of war sanctuaries in Europe during the 3rd century BC could be interpreted as the manifestation of an identity strategy related to the Celts.

5 IDENTITY POLITICS OR ARCHAEOLOGY?: UNIMAGINABLE BINARIES AND THEIR DESTRUCTIVE POTENTIAL TOWARD MATERIAL CULTURE

Abstract author(s): McCabe, Michael (Leiden University)

Abstract format: Oral

Identity is a pressing conversational topic within the modern world, so it should come as no surprise to see that reflect itself in the archaeological world... or should it? Should we be wary of using our modern frame of reference to apply identity on material culture or define it in a way that is reflective of contemporary understandings of self and other? This paper seeks to discuss the use of anachronistic perspectives and terminology surrounding the methodological frameworks of identity within research, reviewing theoretical backings using examples from Etruscology. In doing so, two questions may be raised: Is a post-identity framework possible, and if so, what might it look like?

Discussing new theoretical analyses, such as post-humanist and New Materialist perspectives, in an effort to critically analyse new paradigms against identity-based perceptions is essential if we are to understand emerging views on material culture. My research centres around a new materialist approach toward the archaeological record and, in doing so, conceptualising material culture, not as a passive subject but rather as an actant which plays a part in the more extensive exchange with human actants. I propose a non-anthropocentric approach to material culture as the main propellant to balance out potentially biased identity-based approaches to the material record; this approach will be the main topic of debate within the article.

6 UNDERWATER ARCHAEOLOGICAL IDENTITIES: CONCEPTUALIZATION AND DEFINITION OF PHOENICIAN-PUNIC SHIPWRECKS

Abstract author(s): Jacinto-González, Jesús (University of Almería)

Abstract format: Oral

The conceptualisation and definition of phoenician-punic shipwrecks can lead to a complex epistemological polysemy, which ends up making the cultural and technical barriers of the material reality of the ancient societies we intend to study a very diffuse issue.

Certainly, we have a stable and obvious starting point in the definition of a shipwreck as a closed context made up of the remains of a wrecked ship, or part of its cargo. However, to give it one identity or another depending on what has been found is a difficult question to resolve, where the theoretical and methodological challenge begins.

On the one hand, approaching this conceptualisation strictly from the point of view of naval archaeology forces us to prioritise in the definition process the characterisation of construction techniques and naval typology. In other words, working under the principle of the search for Cato's *punicana coagmenta*.

On the other hand, this cultural ascription can be approached through more versatile approaches, such as the typological study and the chronological dating of the contexts by means of the materials associated with the underwater site and the materials of the wreck's own cargo. This is usually the most common path. And this, without taking into account the possible intrusions of an underwater context, such as an anchorage. And, of course, the question is even more complex when we try to delimit the materials of the cargo and the materials of the crew's equipment.

Therefore, it may be logical to combine the two in an attempt to avoid as many problems as possible. But this would only be a palliative solution. For this reason, we believe that we need to make a joint effort to reflect on the problems of identity and cultural ascription of such unique archaeological finds as phoenician-punic shipwrecks.

7 TECHNO-TYOLOGY: A TOOL FOR UNDERSTANDING BRONZE AGE METALWORKERS' IDENTITIES AND ORGANISATIONS

Abstract author(s): Dumont, Léonard (Ghent University, Department of Archaeology; Université de Bourgogne, UMR 6298 ARTEHIS)

Abstract format: Oral

As direct archaeological traces of Bronze Age metalworkers' activities are very limited compared to the amount of metalwork known for this period, craftsmen remain to a large extent anonymous. Their identities and organisation have been mostly studied indirectly by examining their productions. There is indeed a long-lasting research tradition about Bronze Age metalwork focusing on stylistic features to create typo-chronological classifications, used to identify trends and the productions of different workshops. However, this traditional approach suffers from a major theoretical flaw. It is not clear who, the craftsmen or the users or both, is involved in the decision process leading to the choice of certain shapes or ornaments. On the other hand, production techniques are the result of choices made by the craftsmen alone. As these technological choices reflect craftsmen's habitus and depend on their socio-cultural background, their variations in space enable the identification of different production groups and the monitoring of their evolution in time. To do so, techno-typology seems to be the right tool. This classification system is purely based on the variations observed at different steps of the chaîne opératoire, giving us a proxy to access craftsmen's identities otherwise invisible through the archaeological record. If such classifications are now common in the study of ceramic and lithic productions, it remains scarce in studies dealing with Bronze Age metalwork. In the framework of our dissertation, we were able to build a typo-technological classification of Bronze Age solid-hilted swords based on the results of X-ray imaging techniques. We will present the main results of our research concerning the identification and evolution of production groups involved in the making of these weapons.

8 ENREGISTERMENT AND IDENTITY IN TRANSYLVANIAN BRONZE AGE CERAMICS

Abstract author(s): Arnold, Elizabeth (University of California Los Angeles) - Quinn, Colin (University of Buffalo)

Abstract format: Oral

Material culture plays an integral role in constituting and communicating identity. However, archaeologists continue to grapple with how particular types of material culture assume this role. In this paper, we employ a semiotic approach to develop a framework for how material culture items become encoded to not only reflect social identity, but also help create it. To highlight this approach, we examine a case study from the Wietenberg Culture in Middle Bronze Age Transylvania (2000-1500 BCE). During this period, ceramics became a medium through which Bronze Age Transylvanian individuals displayed and reinforced identities at multiple scales. Employing social network analyses of ceramic motifs, we demonstrate that Wietenberg identity was co-created with ceramic motifs during the Formative Wietenberg (2000-1875 BCE). By the Classical Wietenberg (1875-1500 BCE), ceramic motifs contained significant subregional variation, suggesting ceramics took on additional roles in co-creating smaller-scale social identities, such as households, kin groups, sodalities, and polities. We argue that enregisterment provides an explanatory framework for how a particular category of material culture comes to communicate a particular identity.

9 DO IDENTITIES MAKE POTTERY? PROS AND CONS OF INVESTIGATING IDENTITIES THROUGH POTTERY STYLES

Abstract author(s): Szilágyi, Márton (Eötvös Loránd University, MTA-ELTE „Lendület“ Momentum Innovation Research Group)

Abstract format: Oral

Pottery has always been in the focus of prehistoric archaeology, as it is one of, if not the most abundant find type from that period. This is the reason why pottery has always played a key role in reconstructing past social structures, which have mostly been archaeological cultures. These statements are especially true when talking about Central European archaeology, where there has been an equation between pottery styles and archaeological cultures for a long time. In other words, when archaeologists talked about, for example, the Stroked Pottery Culture, they always meant the group of Neolithic people who made pottery with stroked decoration. Following this logic, the assumption was made that these people shared a common identity which was expressed through the way they made and decorated pottery. As a consequence, we could say pottery style was a foundation for expressing identities in the past.

Was it? Even if there has long been a debate over the meaning and the use of the term “archaeological culture”, the vicious circle of “archaeological culture – pottery style – real social identity” still seems hard to be broken.

The questions arise: was pottery style a distinctive tool for prehistoric people, or is it only an artificial tool made by archaeologists? Can we find cases in which pottery style was a definition of a real past social group, or can we ignore pottery when trying to reconstruct identities? This contribution will focus on the theoretical and methodological issues of reconstructing past social entities through studying pottery styles and will use examples from the Neolithic and Copper Age of Central Europe as illustrations.

10 PAINT ME BY YOUR WAY: APPROACHING IDENTITIES THROUGH IBERIAN PAINTED POTTERY

Abstract author(s): Martínez-Boix, José Luis (Universitat d'Alacant)

Abstract format: Oral

Since the 5th century BC, Iberian culture has featured wheeled painted pottery as one of its characteristic elements. This item has defined the “Iberian identity” from the point of view of archaeological research since its discovery up to the present day.

However, the definition of identities is a complex issue that requires matching two or more groups assumed to be different. This aspect becomes harder to reach when we find ourselves in transition periods, with the end of cultural eras and the beginning of new historical epochs that blur these differences between groups.

That is the case of the end of the Iberian world in the southeast of the Iberian Peninsula, in the region known as Iberian Contestania. In this scenario is where, during the 1st century BC, a new type of painted pottery appeared. This pottery, with a rich array of figures, symbols, and scenes, coincided with the conquest of what was to become the new Roman province of Hispania.

This pottery has been considered an Iberian product since its technique and production process are reminiscent of the craftsmanship skills characteristic of this culture throughout the previous centuries. However, the images depicted in the vessels break with former traditions and offer new messages in a moment of intense changes.

Therefore, in our study of this painted pottery, we are committed to analysing the artistic technique and iconographic aspects to understand the role played by this artistic representation in the assimilation of new identities and social realities in the society that arose with the first Romanisation.

11 SPATIAL AND SOCIAL STUDY OF THE POTTERY FROM CORONA DE QUINTANILLA (LEÓN). A GOLD-MINING SETTLEMENT FROM THE 1ST CENTURY AD

Abstract author(s): Hernández-Tórtolas, Alicia (Spanish National Research Council)

Abstract format: Oral

Para abordar el concepto identitario partimos del modelo propuesto para las formas sociales de la Edad Hierro campesinas, igualitarias, rurales y autárquicas, que cambiarán drásticamente tras el contacto, conquista y dominación romana, sometidas a una economía de mercado, monetaria, tributaria e imperialista. Consideramos que el poder romano produjo la transformación de las formas de organización social indígena en época preprovincial y las primeras formas de desigualdad social. En este trabajo interpretamos el registro material de Corona de Quintanilla para observar estas posibles formas desigualitarias, elitistas o de control de tipo económico, militar o de los espacios en este asentamiento. Vemos una población indígena astur que está explotando la mina de oro para tributar y en unas condiciones de vida bastante precarias. Está claro que todo proceso de dominación implica un proceso de imposición, transformaciones y adaptaciones. Sin embargo, hay una clara dominancia de cerámica y otros materiales de tradición indígena (95%) que conviven con bienes de lujo romanos (vidrio, vajilla fina de mesa, etc.). Esto parece indicar por un lado desigualdades en las formas de estructuración internas del poblado pero también la necesidad de sus habitantes por mantener las tradiciones de forma casi resiliente. Consideramos viene propiciado por la transferencia y permeabilidad del conocimiento que respaldaría el traspaso de ciertos saberes técnicos desde la Edad del Hierro en adelante. Implica la revisión del concepto de “aculturización” y “romanización” entre otros. Metodológicamente, nos hemos centrado en la cerámica de tradición indígena y su estudio desde la materialidad, su distribución espacial, su correlación estratigráfica y su asociación con el resto de conjuntos y ajuares del registro doméstico. Qué papel representan estos materiales en las esferas de producción, economía y sociedad como producto cultural para acercarnos a las formas de vida, consideración de identidad(es) y de pertenencia al grupo con un pasado común heredado.

12 IDENTITY BEHIND CLOSED DOORS

Abstract author(s): Gür, Selin (Universität Bern)

Abstract format: Oral

Houses are social entities and reflect the everyday life, the experiences, the culture, the people's behaviour. People are expected to resonate with what they see, learn and get influenced by from the outside, only to the extent to which they adopt and indigenize it. From this point of view, it is expected that the changes they adopt in their own private spaces can be followed throughout the settlement periods in terms of urban layout, architecture, spatial arrangement, and material culture. In this way, therefore, it is possible to analyze houses' plans and internal arrangements and relations between and within households. The concretization of ideas and thoughts also happened with the adaptation of the developing technology in the materials they used and the influence they gained through social interaction with their surroundings. It is then also expected that these physical structures and finds reflect identity.

Identity may shape and adapt differently within the household and the community in terms of power and status, depending on the social norms and cultural values of the society. Therefore, impacts such as the socio-cultural and political situation of the communities; beliefs and traditions of the people are also to be considered. This study will present the data used for analyzing identity both at domestic and societal level and suggest methods used for evaluation while touching upon the aspects which have an impact on the identity phenomenon such as time, location and environment. It will compare these methods and discuss the difficulties that may be encountered. Finally, it will show the prospective results.

13 FACING THE GORDIAN KNOT OF IDENTITY: INTERSECTIONALITY AND THE RELATIVIZED REPRESENTATION OF IDENTITY IN MORTUARY ARCHAEOLOGY

Abstract author(s): Schlegel, Valery (Freie Universität Berlin)

Abstract format: Oral

To define identity is complex because what is denoted by it changed over the years; it is culturally situated in time and place, it is in need of constant repetition and therefore naturally underlies constant change (small change in short-term, but remarkable in long-term). While research on identity in its beginning focused on ethnic groups and national identities, other aspects such as gender, class and status came to the front later and finally took a turn with the contribution of E. Brumfiel, who advocated for an agent-based approach. In the 21st century, identity is now often seen in a holistic manner, as a combination of a number of social identities that is bigger than their sum.

However, identity should not just be fathomed as a combination but as a nexus of intersecting, reciprocally influencing identity aspects (forming a seemingly inextricable knot). I argue that this intersectionality also needs to be balanced with the knowledge that not all aspects of identity are equally expressed in the archaeological material and that every case study needs to analyze carefully which identity aspects are more or less represented in the data due to the nature

of said data. This contribution aims to discuss the intersectionality of identity aspects and their relativized representation in mortuary archaeology to formulate some guidelines for their examination in such contexts; with a few examples from mostly Assyrian and Scythian burials, it will be analyzed how the identity aspects gender, age and status affected each other to be more or less represented in the archaeological remains of funerals as well as how the conscious selection of grave goods by the kin responsible for the burials influences the interpretation of the identity of the dead today.

14 “SOCIO-PROFESSIONAL IDENTITIES” IN LATE PREHISTORY SOCIETIES. IS THERE REALLY SUCH A THING?

Abstract author(s): Poigt, Thibaud (UMR 5607 Ausonius - University Bordeaux Montaigne; UMR 5608 TRACES - University Toulouse Jean Jaurès)

Abstract format: Oral

The funerary contexts of the Western Bronze and Iron Ages provide quantity of tombs that were labelled based on what we would call today “socio-professional categories” as the “goldsmith tomb” or the “merchant tomb”. These distinctions from other contemporary graves – which lack the appropriate funerary goods – are generally based on the presence of unusual artefacts or specific combinations. Nevertheless, they imply that the identity of the deceased match a certain specialisation in the society in terms of socio-economic activities.

That leads to question the existence of “socio-professional identities” in these ancient societies. Can we really say that, during the Metal Ages, some individuals may have defined their own identity in terms of producing gold objects or trading in goods.? If they did, how can we use the archaeological record to characterize it?

These hypotheses generally rely on a succession of interpretations about artefacts, about funerary mise en scene, and about the idea we have about the studied societies. However, each level of interpretation contains bias, strongly linked to own opinions of the archaeologists that conjured them.

Through several examples from the Western European Bronze and Iron Age, this paper aims to present various specialised activities of the production and the exchange that are called to characterize the socio-professional status of deceased. We will focus on the artefacts at the basis of the hypotheses and question the highlighting of some over others. From this data, we want to debate about the way we handle identities concepts and categories – as part of the archaeological process – that carry within them scientific bias which may say more about archaeologists than about the societies they study.

15 IDENTITY IS IN THE EYE OF THE INTERPRETER: CASE STUDY OF ROMAN PERIOD SLOVENIA

Abstract author(s): Stemberger Flegar, Kaja (PJP d.o.o.)

Abstract format: Oral

The present paper is based on the premise that every interpretation is influenced, consciously or unconsciously, by the personal circumstances of the researcher doing the interpretation. Different elements form the context in which researchers do their work, including but not limited to political, cultural, ethnic, historical, and personal circumstances. Just as the identities that the researchers study, also their own identities driving the interpretation are not singular and monolithic, but rather multifaceted and fluid.

Similar to the age, sex, gender, and social standing of the research subjects, certain aspects of the researchers’ identities are easier to trace, such as the time period and language in which they worked. Both influence entire generations, while personal elements are more limited to one researcher at a time. The proposed paper first and foremost addresses two of the factors shaping interpretations: historical context, where I examine the zeitgeist of the periods in which interpretations of identity happened, and the native language of the researchers. The first usually dictates what areas of identity were at all explored and what was important to the researchers of the time, while language defines our entire perception of the world, and consequently also our interpretations.

As a Roman archaeologist, I focus on identity studies of the population that lived in Roman period Slovenia. The theoretical endeavours dealing with Roman period identities in Slovenia are geographically and temporally narrowly delimited. As such, they provide suitable grounds for testing aspects of identity and their interpretations in terms of topic choices and derived conclusions, and explore how different historical settings and language shaped them.

THE ACHAU CEMETERY - AN ATYPICAL AVAR BURIAL GROUND FROM AUSTRIA

Abstract author(s): Özyurt, Jasmin (Austrian Academy of Sciences- Institute for Medieval Research) - Klostermann, Paul (Natural History Museum Vienna, Anthropology Department) - Strang, Sheridan (Novetus GmbH) - Tobias, Bendeguz (Austrian Academy of Sciences- Institute for Medieval Research) - Jana Pneisl, Jana - Binder, Michaela (Novetus GmbH)

Abstract format: Oral

A substantial amount of funerary evidence from the Early Medieval Period has surfaced in Eastern Austria due to increased development and agricultural activity over the last 200 years. This includes approximately a hundred known burial grounds and several thousand graves from the 7th to the 9th century AD. One could assume that this period and its living conditions are already well understood due to the large number of known human remains and grave goods. However, the excavation of the Achau cemetery suggests otherwise. This partially excavated cemetery dates to the Mid to Late Avar Period (ca. 650 to 800 AD) and is located south of the Danube River in the northern part of the Vienna Basin.

Compared to Avar Period cemeteries in the vicinity, Achau is unique in regard to its find material. In addition to typical burial goods from the Avar Period, finds, some of which are unique for Eastern Austria, were discovered. Approximately half of the excavated inhumations contained high-quality multi-part belt sets. As well as to their material value, belt sets, commonly found in only 10-15% of male inhumations within the Avar Empire, signify prestige and symbolic meaning.

While the discovery of high-quality artefacts suggests high social status individuals at Achau, evidence from skeletal remains indicate that parts of the population was affected by negative living conditions. This is shown by skeletal changes from metabolic stress during childhood and infectious diseases like tuberculosis. Additionally, the high rate of juveniles amongst the excavated burials might indicate a heightened mortality rate.

The impressive material culture and the contrasting osteological evidence make Achau an exciting opportunity to study the diversity of life experiences in the Avar Period.

"KALEIDOSCOPE" OF IDENTITIES: SOME REFLECTIONS FOR AN ARCHAEOLOGICAL APPROACH

Abstract author(s): Pini, Nicolo (Université libre de Bruxelles)

Abstract format: Oral

Dealing with identities is always complicated, especially within a discipline like archaeology, which insists almost exclusively upon using material findings. It is not only the limitations of an archaeological approach, but the nature of identity itself and, more specifically, its diversification and complexity, that represent a problem. To better explain the 'nature of identity,' it is helpful to refer to the idea of a "kaleidoscope of identities" that can describe a single individual. There are multiple identities (cultural, religious, political, ethnic, socio-economic, etc.), sometimes in conflict with one another, sometimes coexisting and galvanised – all at once or just some – according to the context in which the person finds him or herself. Every single identity, included into this broader frame of self-description(s), might have some form of "material" output.

The paper aims to offer some theoretical reflections and possibly some methodological tools to address these different material outputs, bringing a series of examples from the Roman and Late Antique Middle East. Although referring to a variety of material evidence, the built environment will be a privileged object of analysis. More specifically, it is seen as an extremely useful instrument to understand better understand extended family or "tribal" structures and connected identity patterns. In particular, they might be seen as major factors in determining specific forms of spatial organisation at different levels in the settlements (especially in rural contexts) and be also one possible explanation for their recurrence in several areas across the Middle East and over a wide chronological span.

Ultimately, the paper underscores the importance of avoiding rigid and univocal categorisations of personal or communal identities, prioritizing instead the description of the different identities at play in a specific context, and whenever possible, attempting an explanation of why they were preferred to others.

A. INTERCONNECTIVITY OR GLOCALITY? A METHODOLOGICAL PROPOSAL FOR IDENTITY STUDIES IN ROMAN SOCIETIES

Abstract author(s): Díaz Sánchez, Carlos (Universidad Complutense de Madrid)

Abstract format: Poster

More recent studies on cultural processes and identities in ancient Rome have begun to integrate archaeological remains as a fundamental pillar in the proposed hypotheses. However, in many cases, the methodologies used to unravel how these cultural changes take place and the identity of these societies is perceived, despite their success, tend to have a strong regional character, and cannot be used in more complex cases. For this reason, this poster proposes

a methodology that aims to analyse the different cultural processes and to configure the identity of assimilated or conquered societies. This methodology is premised on the analysis of scales (or structures), allowing us to observe the different levels of imposition, acceptance and rejection of provincial societies. For this purpose, the different material remains available and the interconnectivity of this territory with the rest of the Roman World are observed, understanding in a more complete way the integration of the territory within the Roman culture and the construction of identity in the different provinces.

349 REVEALING THE MANY NARRATIVES OF TOBACCO: TOWARDS AN INTERDISCIPLINARY ARCHAEOLOGY OF TOBACCO AND CONSUMPTION

Session theme: 6. Contested Pasts & Presents

Session organisers: Inskip, Sarah (University of Leicester) - Casna, Maia (Leiden University)

Session format: Regular session

Tobacco is one of the most important non-food crop plants in human history. Archaeological research suggests humans have been consuming tobacco for millennia in the Americas where it was used by indigenous peoples in rituals, medicine, trade and recreation. European arrival in the Americas in the 16th century was a watershed moment in tobacco history. Their interest in the medicinal properties of the plant, coupled with recreational use, resulted in a transatlantic tobacco trade, and led to the incorporation of tobacco into everyday life in Europe and beyond. It was also an early impetus for the slave trade and exploitative networks, which has deep ramifications today. Despite significant research by historians, archaeologists have had limited engagement with the topic of tobacco, especially in Europe. Research has revolved around clay tobacco pipes, and focuses on pipes as a dating mechanism, rather than to learn about tobacco history itself. This session aims to expand our knowledge on the varying roles of tobacco in the lives of past peoples and the differing ways that archaeologists can weave a new interdisciplinary tobacco narrative more reflective of its true significance. Topics of interest include, but are not limited to, studies of material culture (clay pipes, snuff boxes, tobacco jars etc), network analysis, archaeology of colonies and production sites, theoretical perspectives on intoxication and consumption, bioarchaeology and residue analysis.

Aim:

- Bring together scholars working on tobacco in any region of the world and at any time.
- Get people to think about tobacco as an agent of historical change.
- Consider the multiplicity of roles and personas of tobacco, beyond recreational use.
- Bring tobacco history to the fore of discussions on early colonialism, imperialism and inequality.
- Encourage understanding of the wider value of clay tobacco pipes for assessing social consumption practices.

ABSTRACTS

1 METABOLOMICS ON OSTEOARCHAEOLOGICAL REMAINS: A MOLECULAR TOOL TO INVESTIGATE TOBACCO CONSUMPTION IN BRITISH POPULATIONS

Abstract author(s): Badillo-Sanchez, Diego - Serrano-Ruber, Maria - Davies-Barrett, Anna (School of Archaeology and Ancient History, University of Leicester) - Jones, Donald (Leicester Cancer Research Centre, RKCSB, University of Leicester; The Leicester Van Geest MultiOmics Facility, University of Leicester) - Inskip, Sarah (School of Archaeology and Ancient History, University of Leicester)

Abstract format: Oral

Tobacco consumption in European societies has been an important topic since its appearance after the 16th century. Tobacco consumption in the osteological record is sometimes traceable in skeletal remains with excellent preservation and completeness when evidence of pipe notches and/or lingual staining can be seen on the dentition. However, such an approach offers an incomplete view of previous consumption, as tobacco was used in ways that will not leave marks on the teeth, and individuals lacking teeth cannot be studied. This creates a need to have another method to evaluate tobacco consumption by past individuals without such limitations or biases.

Our research group has developed a new approach that integrates metabolomics into archaeological science. Metabolomics study small molecules present in an organism and/or their modifications due to a variety of factors. When applied to osteoarchaeological material, it is possible to obtain new molecular information that can be used to understand different conditions of the past.

Tobacco consumption was macroscopically evaluated in 323 individuals from two different British sites (Barton-upon-Humber & London, UK). These were grouped as “Detected” (90), “Undetected” (68), or “Undetermined” (153) based on pipe notches and/or staining. 503 femora micro-samples (including triplicates from 90 individuals) were obtained and subjected to a solid-liquid microextraction, which led to 1006 metabolite extracts used for two sepa-

rated LC-HRMS metabolomic experiments (C18 Reversed-phase and HILIC). 140 less polar/apolar and 250 polar useful metabolites were recovered from which 44 less polar/apolar and 30 polar metabolites were statistically identified as possible biomarkers associated with tobacco consumption in human osteoarchaeological remains. Finally, using the metabolomic data, a mathematical model was created to assign a smoking status to the “Undetermined” individuals. By using a cross-validation of both analytical assays, 119 individuals out of 153 “Undetermined” were placed in the same category, “Detected” or “Undetected”, by both tests.

2 IS EACH CIGARETTE CEMENTING IN OUR TEETH? THE CONSUMPTION OF TOBACCO FROM THE DENTAL CEMENTUM BETWEEN PAST AND PRESENT

Abstract author(s): Perrone, Valentina (Forensic Science Research Group, Department of Applied Sciences, Faculty of Health and Life Sciences, Northumbria University) - Randolph-Quinney, Patrick (Forensic Science Research Group, Department of Applied Sciences, Faculty of Health and Life Sciences, Northumbria University; Department of Human Anatomy and Physiology, Faculty of Health Sciences, University of Johannesburg) - Inskip, Sarah (School of Archaeology and Ancient History, University of Leicester) - Procopio, Noemi (School of Natural Sciences, University of Central Lancashire; Forensic Anthropology Center, Department of Anthropology, Texas State University)

Abstract format: Oral

Dental cementum has been studied mainly to estimate age and season at death in mammalian teeth. Its circannual incremental growth can be used to estimate age within 10 years from real age in adult individuals, which is normally not achievable following traditional anthropological techniques. Three factors make this tissue so useful in biological anthropology: 1) its biorhythm; 2) its low to no remodelling activity; and 3) its continuous growth throughout an individual's life. These features make the cementum a time capsule, enough so that some researchers have tried to use it to detect pathologies or to date life events.

In a recent ongoing study on a modern population, a specific alteration to the cemental pattern of growth was identified in association with smoking habits. This alteration consisted of areas of undefined tissue, where the incremental lines were unobservable. To further investigate this phenomenon and assess its use for understanding past smoking habits, we tested whether the same features were observed in an archaeological population known to use tobacco and to contain individuals that had direct macroscopic evidence for tobacco consumption. The cemetery from Holy Trinity church, Coventry saw burials between 1776-1850 when tobacco was commonly in use by the population.

We assessed teeth from twenty individuals with and without macroscopic evidence for tobacco in the form of dental staining and/or pipe notches and for disruptions to cementum structure as seen in the modern controls. The assessment aimed to understand the smoking habits of this archaeological population in terms of a) the extent of its consumption; b) if tobacco was more commonly consumed by male or female individuals; c) the age at which they started smoking; d) if they stopped in later years or not, finally drawing a picture of the relationship between this population and their consumption of tobacco.

3 DISEASE PREVALENCE AND ITS RELATIONSHIP TO TOBACCO CONSUMPTION IN INDUSTRIAL ENGLAND

Abstract author(s): Davies-Barrett, Anna - Badillo Sanchez, Diego - Serrano Ruber, Maria - Inskip, Sarah (University of Leicester)

Abstract format: Oral

Modern clinical studies of tobacco smoking have demonstrated the extremely detrimental effect of this behaviour on health. Increases in cancers and oral, respiratory, and certain metabolic diseases have all been correlated with tobacco smoking. Smoking in the past is detectable in skeletal human remains by the presence of pipe-facets on the dentition and dental staining. Further, new advances in metabolomics have been successful in identifying the smoking status of past individuals who lack osteoarchaeological evidence. However, little has yet been done to explore the impact of tobacco smoking on the health of past people by comparing smoking-status with disease prevalence rates in human skeletal remains. As part of the UKRI-funded Tobacco, Health & History project, we have identified individuals who smoked using osteoarchaeological and metabolomic methods in two industrial period British populations (St James, Euston and Barton-upon-Humber). This paper compares the prevalence of various diseases in smokers and non-smokers from both sites to investigate the potential impact of tobacco smoking on health in these populations. Furthermore, using an intersectional approach, frequency rates of smoking in different sex, age, and status groups will be identified and the possible cumulative impact of smoking in combination with living environment, occupation, sex, and age in disadvantaged groups discussed.

4 TOBACCO ON THE TRITON – TRACING THE TRANSATLANTIC TRADE, HARBOURS AND CARGO UNDER CAPTAINS FLODBERG’S AND EDLING’S LEAD, 1795-1805

Abstract author(s): Nilsen, Andrine (Rio Göteborg Kultur- och Naturkooperativ)

Abstract format: Oral

Archival records of captain’s instructions, ships journal, bills, cargo records and letters allow us to follow the ship Triton on its journeys between Stockholm/Gothenburg and the Caribbean for a decade, 1795-1805. The ship is under Captain Flodberg’s and Captain Edling’s command for the duration, as part of the Swedish West India Company. The aim of the project is to study the microcosm i.e. the ship Triton, and map harbours, cargo, networks and the people on board, and not the least sailing routes. Although, sugar and traces of slavery are the main topics of the project, tobacco was among the top cargoes listed.

The shipments of tobacco, on what islands it grew, in what harbours it was loaded, what species of tobacco traded, where it was discharged and in what quantities are questions that will be discussed. From an archaeological perspective there is mention of warehouses to store the tobacco in various ports, which gives both the production of tobacco and the storage a spatial property that could be further explored. Another issue is in what ports – “negroe rentals” – were used for the loading and unloading of the tobacco, connecting the produce to the slave trade and exploitative networks of the West Indies and Europe.

5 TRACES OF SMOKEWAYS ON CLAY PIPES AS INDICATIONS OF SOCIOECONOMIC DIFFERENTIATION IN 17TH AND 18TH CENTURY SWEDEN

Abstract author(s): Bergman Carter, Robert (Department of Archaeology and Ancient History, Lund University)

Abstract format: Oral

This paper will present the heuristic concept of smokeways, which is proposed as a means to understand and make salient how clay tobacco pipes and smoking were applied in negotiations of socioeconomic differentiation in the past. Drawing on social practice theory, my ongoing PhD project explores the effects of treating fragments and assemblages of clay tobacco pipes as material remains of consumption practices that, similarly to food and drink, were active in negotiations of socioeconomic status in 17th and 18th century Sweden. By applying a source pluralistic approach to written and pictorial sources, I present evidence that pipe smoking, though almost ubiquitous, was not considered a homogeneous practice, and that both mores surrounding smoking and the pipes themselves were employed to regulate, communicate, and distinguish ideated and correct smokeways from those considered incorrect.

A significant part of my research has been concerned with identifying smokeways specific to different socioeconomic groups and time periods in the documentary record, and subsequently to identifying specific markers that these smokeways may have left on pipe fragments available in the archaeological record. Based on these observations, analyses of clay pipe assemblages from across Sweden show that varying smokeways may indeed explain varying distinct traces in the archaeological record; traces which in turn can be juxtaposed to the specific smokeways of particular socioeconomic groups. I therefore argue that pipe fragments should be afforded the opportunity to act as closely dateable pieces of evidence of the functional roles they played beyond their function as instruments for tobacco smoking, acting as material elements in socioeconomically defined practices of varied smokeways.

6 INTERDISCIPLINARY APPROACHES TO ASSESSING TOBACCO CONSUMPTION: A CASE STUDY OF THREE ENGLISH SITES

Abstract author(s): Inskip, Sarah - Davies Barrett, Anna - Badillo Sanchez, Diego - Serrano Ruber, Maria (University of Leicester)

Abstract format: Oral

Tobacco is one of the most important plants in human history. Its cultivation, commodification, mass production and consumption has had a myriad of effects on the lives of billions of people across the globe. However, scholars of past have barely engaged in the wider ramifications of tobacco use. The history of tobacco and its consumption has largely been dominated through the study of historical sources and documents, while archaeological contributions have largely been limited to studies of clay tobacco pipes, their typologies and dates. While each provide key evidence about the use of this important plant, they only contribute to a partial picture and are biased towards specific users, usually elite males, or tobacco types (pipes). We argue that an interdisciplinary approach that brings together archaeological and historical evidence, and integrates biomolecular methods, offers the greatest potential to reconstruct past tobacco use patterns. We demonstrate this through a case study of three English sites (St James, Euston; Barton upon Humber, Lincolnshire; Holy Trinity, Coventry) where although we find areas of commonality, we also identify clear variation in tobacco consumption between location, gender, ethnicity and lifestyle. From this, we are able to provide a deeper understanding of the variety of reasons that people may have chosen to use tobacco and how

this intersects with various aspects of identity. Critically, this allows us to investigate for the first time how individual and communal choices were important in shaping the tobacco trade. This allows us to link with larger debates about consumerism and the wider impacts of consumer choice in large complex networks.

350 BIO-ARCH METHODOLOGIES TO ASSESS MOBILITY IN THE PAST: THE NEED FOR INTERDISCIPLINARY AND MULTI-PROXY INVESTIGATIONS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Bernardini, Sara (Aix-Marseille Université; Sapienza Università di Roma) - Farese, Martina - Zeppilli, Carlotta (Sapienza Università di Roma) - Micarelli, Ileana (University of Cambridge)

Session format: Regular session

Mobility has always been a constant in past human populations. Several proxies are routinely used to assess short and long-range displacement: e.g. molecular analyses, such as isotopes and aDNA, material culture and osteological studies. The archaeological context is then essential to evaluate the social, economic and cultural drives of human displacements and, therefore, crucial to design research questions and contextualise bio-archaeological results. What is currently needed is an ongoing dialogue between these different fields of research. This dialogue is usually limited to a few disciplines without comprehensively considering all the data available.

This session wants to emphasise the importance of a multidisciplinary approach from the very first steps of the archaeological investigation, not only in the final interpretation of the data. We want to discuss the best practices necessary to perform more comprehensive mobility studies and the limitations that arise when there is no communication between disciplines. Intra-regional mobility reconstructions, in particular, require the involvement of numerous research fields to interpret and contextualise the data. Nonetheless, discussions on long-range displacements will be welcomed, considering their prominent role in mobility studies. We encourage participants to share case studies which would benefit from a cross-disciplinary approach. We will include every proxy used in mobility assessments, such as archaeometric investigation on material culture, biomechanical analyses of long bones, isotopes and aDNA.

The primary focus of this session lies on prehistoric contexts since a lack of written sources makes interdisciplinary approaches essential for reconstructing mobility patterns. Yet, studies on Classical and Late Antiquity cases are welcomed to compare how such interdisciplinary perspectives can be applied to prehistoric and historic contexts.

ABSTRACTS

1 MOBILITY OF LANGUAGES WORLDWIDE (5000 BP-PRESENT)

Abstract author(s): Wichmann, Søren (Kiel University)

Abstract format: Oral

New methods for dating language families or subgroups (Holman et al. 2011) and for inferring their geographical origins (Wichmann and Rama 2021) allow for assessing movements of languages in prehistory. Based on these methods, the present study analyzes more than 2000 diffusion events inferred to have taken place from c. 5000 BP to the present. Rates (=speed) of diffusion can be shown to be higher across the sea and slower at high altitudes. With respect to other kinds of landscape no significant differences in rates can be found. Another observation is that the languages of agriculturalists spread somewhat more rapidly than those of hunter-gatherers. Finally, rates of language diffusion vary across areas and periods, but a shared pattern across most world areas is an increase (peak) in the rates roughly around 4000 BP and 1000 BP. The findings will be compared to insights from archaeology and genetics. These disciplines show environmental conditions on human movements that are generally quite similar to the ones identified in this talk for languages (Fort 2021), suggesting that the spread of languages is largely a matter of demic diffusion, even if languages can and often do spread across populations independently of the movement of people.

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2 SHEDDING LIGHT ON THE DARK AGES: RECONSTRUCTING DIETARY HABITS AND MOBILITY PHENOMENA IN MEDIEVAL FLORENCE USING A MULTI-ISOTOPIC APPROACH

Abstract author(s): Giaccari, Matteo (Dipartimento di Scienze della Terra, Università di Roma La Sapienza) - Soncin, Silvia (Department of Environmental Biology and Mediterranean bioArchaeological Research Advances - MAREa - centre, Sapienza Università di Roma) - Pellegrini, Maura (Isotope Mass Spectrometry and High Resolution Elemental Analysis, Thermo Fisher Scientific S.P.A.) - Riga, Alessandro (Dipartimento di Biologia, Università di Firenze) - Di Matteo, Martina (Dipartimento di Scienze Dell'Antichità, Università di Roma La Sapienza) - Lelli, Paolo (Cooperativa Archeologia) - Tafuri, Mary (Department of Environmental Biology and Mediterranean bioArchaeological Research Advances - MAREa - centre, Sapienza Università di Roma)

Abstract format: Oral

Here we aim to reconstruct dietary habits and possible mobility phenomena of individuals recovered from the cloister arcade of San Pier Scheraggio in Florence (11th – 13th century CE) inside the Uffizi complex. To do so, we apply a multi-isotopic approach that combines $\delta^{13}\text{C}$, $\delta^{15}\text{N}$ and $\delta^{34}\text{S}$ used, to our knowledge, for the first time in high/late medieval Italy.

Historical sources suggest that between the Early and Late Middle Ages there was a shift in dietary habits driven by the church. In particular, fish became more important, followed by an increased use of C4 plants and a decreased use of animal products in relation to the social class. The evidence however is limited and mainly based on historical reports and archaeobotanical remains, with a lack of isotopic studies investigating mobility in Tuscany in this period. Hence, there is still the necessity to have direct evidence of the population's food habits and mobility phenomena. This can be obtained thanks to the isotopic analysis of carbon, nitrogen and sulphur in bone collagen.

The overall diet of the population buried at San Pier Scheraggio is in line with that of other Medieval communities from Italy, although with a higher contribution of animal products. We suggest that in Florence there were no dietary differentiations in relation to age or sex. However some differences can be outlined, particularly in the consumption of C4 crops, possibly in relation to the status of the individuals. Although the limited sample size, we could identify at least one individual with a statistically different $\delta^{34}\text{S}$ value, which could be interpreted as non-local.

In general, this study is helping to shed new light on the life of possibly middle/high-status individuals that were given the privilege of being buried in the cloister arcade.

3 THE NECESSITY OF INTERDISCIPLINARY METHODOLOGIES FOR INVESTIGATING THE PAST: A CASE STUDY FROM SOUTHERN FRANCE

Abstract author(s): Holmstrom, Jane (Department of Anthropology, Grinnell College) - Dupras, Tosha (College of Arts and Sciences' Dean's Office, Texas Tech University) - Ardagna, Yann (UMR 7268 Anthropologie bioculturelle Droit Ethique et Santé, AMU-CNRS-EFS, Faculté des Sciences Médicales et Paramédicales de Marseille) - Vidal, Laurent (Institut National de Recherches Archéologiques Préventives, Centre de Recherches Archéologiques)

Abstract format: Oral

The medieval period boasts an extensive written record in many geographical areas, particularly in larger cities. However, in smaller villages or areas that were subject to warfare, written records no longer remain. In southern France, written sources pertaining to the 9th – 13th century Cluniac churches of Saint-Jean de Todon and Saint-Victor-la-Coste are extremely rare.

Without surviving records, analyses of skeletons and material culture are the only ways in which to learn about the people buried in these cemeteries. Further information can be gathered using a combination of additional methodologies. These include isotopic analyses, the use of GIS, and expanded contextual documentation of medieval Christian France. It is through the combination of these methodologies that we can interpret the impact that Christianity had on diet, mobility, status, and diversity within the site. Utilizing GIS to map estimated regions of origin and individual burial location in the cemetery creates new dialogue and generates new questions that otherwise would not have been possible.

Without multidisciplinary biogeochemical analyses, isoscapes would not be available for use by anthropologists interested in mobility studies. It is important to collaborate within the different branches of anthropology as it is to collaborate with other disciplines to gain a more informed understanding of past populations.

4 THE ROAD LESS TRAVELLED: AN INTERDISCIPLINARY, MULTI-PROXY APPROACH TO MOBILITY IN PRE- AND PROTOHISTORIC SCOTLAND

Abstract author(s): Koster, Lucy - Czére, Orsolya (School of Geosciences, University of Aberdeen) - Booth, Thomas - Skoglund, Pontus - Silva, Marina (Ancient Genomics Laboratory, The Francis Crick Institute) - Curtis, Neil (Museums and Special Collections, University of Aberdeen) - Britton, Kate (School of Geosciences, University of Aberdeen) - Girdland Flink, Linus (School of Geosciences, University of Aberdeen; School of Biological and Environmental Sciences, Liverpool John Moores University)

Abstract format: Oral

This paper presents the theoretical background to, and preliminary results of, a PhD project employing aDNA, dietary isotopes, and mobility isotopes to investigate prehistoric and protohistoric populations within the geographic boundaries of modern Scotland. The integration of biomolecular analyses – aDNA (to investigate biological relatedness and genetic ancestry), dietary isotopes ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, $\delta^{34}\text{S}$), and mobility isotopes ($\delta^{18}\text{O}$, $87\text{Sr}/86\text{Sr}$, $\delta^{34}\text{S}$) – has been at the core of the study from conception. The key aim is to produce biogeochemical profiles of skeletal individuals for reconstruction and inference of certain aspects of life history, including residence patterns and relatedness amongst burial populations. Interdisciplinary perspectives from osteoarchaeology, excavation records, historical perspectives, and curatorial concerns, among others, have been integrated into project design.

The presentation will specifically focus on how placing the individual, rather than a specific analytical technique, at the core of the project enables more nuanced critical discussions of individual mobility and life history. This includes interrogation of the use of concepts such as ‘local’ in relation to both isotopic and genetic data, and how a more nuanced appraisal of the data can be used to look at intra-regional and fine-scale mobility as well as wider-scale mobility, especially in combination with other forms of archaeological information. Emphasis will also be placed on the importance of considering different data as they relate to different temporal scales, and how ‘conflicting’ or ‘ambiguous’ results can in fact provide greater insight into the life history of an individual. Lochhead Quarry, an early medieval long cist cemetery, will be used as a case study.

5 QUO VADIS, PEREGRINUS? EASTERN GERMANICS IN ANGERS (FRANCE) AT THE END OF ANTIQUITY

Abstract author(s): Souquet, Isabelle (Institut National de Recherches Archéologiques Préventives; University of Bordeaux) - Briceno-Boucey, Lola (University of Bordeaux) - Guillon, Mark (Institut National de Recherches Archéologiques Préventives; University of Bordeaux) - Pruvost, Mélanie (CNRS; University of Bordeaux)

Abstract format: Oral

The excavation of the surroundings of the Saint-Laud station in Angers (France) in 2000 brought to light a late-antique necropolis used between the IInd and the Vth century. Within the buried population, a group of individuals is differentiated by the presence of ornaments and objects deposited in the burial, characteristics of the civilization of Tcherniakov whose origin is about 3000 km away, north of the Black Sea and to the Lower Danube.

Other clues, such as the biological characterization of these individuals and the orientation of their burial, also differentiate them. But at the same time, their burial, within this necropolis itself, highlights their integration into the population.

The question of mobility therefore arises, on the scale of this Eastern Germanic grave goods on the one hand and of these individuals, on the other, between the cradle of origin of this population and their place of burial.

In the context of the “Migration Period” at the end of Antiquity, the presence of this grave good carried by individuals for whom the funerary practice differs from other burials challenged us and led to various interdisciplinary questions on the processes of transfer or migration of populations and/or cultural objects: has there been a migration of individuals with their grave goods or are we in the presence of acculturation? Who are these individuals? Was there interbreeding? What places/roles do they have in this society? What process (identification and role) brought these individuals and/or this material culture to the far west of the Roman Empire?

This communication presents the most recent results of different interdisciplinary research paths (archaeological, anthropological, paleogenomic and historical) used to respond to the problem of mobility through the filter of material culture, individuals and funerary practices.

6 TRADITIONAL AND NOVEL INSIGHTS TO INVESTIGATE HUMAN PROVENANCE IN LUCUS FERONIAE USING STRONTIUM ISOTOPES

Abstract author(s): Farese, Martina (Department of Environmental Biology, Sapienza University of Rome; Mediterranean bioArchaeological Research Advances - MAREa - centre, Sapienza University of Rome) - Bernardini, Sara (Aix Marseille Univ, CNRS, Minist Culture, LAMPEA; Department of Environmental Biology, Sapienza University of Rome) - Zeppilli, Carlotta (Department of Environmental Biology, Sapienza University of Rome) - Micarelli, Ileana (McDonald Institute for Archaeological Research, University of Cambridge) - Fernandes, Ricardo (Max Planck Institute of the Geanthropology; Climate Change and History Research Initiative, Princeton University; Department of Archaeology and Museology, Masaryk University, Faculty of Art) - Tafuri, Mary Anne (Department of Environmental Biology, Sapienza University of Rome; Mediterranean bioArchaeological Research Advances - MAREa - centre, Sapienza University of Rome)

Abstract format: Oral

An interdisciplinary research has been carried out on a subsample of individuals from the Roman cemetery of Lucus Feroniae (Rome, Italy). The site, located 30 km north of Rome, was a rural village during the Roman Empire (I-III cent. CE). The archaeological record suggests it was inhabited by locals, war veterans (from the legions of Caesar and Augustus) and freed slaves. Given the scarcity of available data on members of the working class during this time period, we wanted to reconstruct the origins, mobility patterns and living conditions of the people buried outside the village of Lucus Feroniae. Due to the lack of archaeological evidence from the cemetery to address this issue, we have combined palaeopathological studies and strontium isotope analysis ($87\text{Sr}/86\text{Sr}$). Six individuals (three females and three males) with pathological signs on the skeleton of harsh living conditions - identifying them as probable members of the working class - have been selected for a strontium isotope study on dental enamel. To identify the place of origin of the six individuals a baseline of the geological setting of Lucus Feroniae has been created using: human bones, animal teeth and bones and soil samples from the site; as well as soil values collected from the literature. Since strontium values are connected to the geological signature of the area, several places - close or far away from each other - may present similar isotopic values. To overcome this limit, a Bayesian approach - using the AverageR and LocateR models available through the Pandora and IsoMemo initiatives - has been applied to estimate the probability of an area being the place of origin of these individuals, and explore their life histories.

7 BIOMECHANICAL ANALYSIS OF PHYSICAL ACTIVITY IN A MEROITIC CEMETERY FROM NORTHERN SUDAN

Abstract author(s): Casquero Muñoz, Mar - Ríos Frutos, Luis (Universidad Complutense de Madrid)

Abstract format: Oral

We present the biomechanical study of humerus and tibia of the skeletons recovered from the Nubian Meroitic cemetery of Amir Abdallah (northern Sudan). This necropolis was excavated between 1978 and 1981, and 389 skeletons were recovered from 377 tombs, dated from the third to the first centuries BC from radiocarbon analyses. Our objective was to explore the levels of ambulatory activity and upper limb workload from the analysis of solid cross-sectional images of tibia and humeri. Only adult skeletons were selected for the study, whose osteological sex was estimated through metric analyses of the pelvic bone (DSP2 method), with a total of 52 males and 78 females. Tibiae and humeri were scanned with a surface scan, and solid cross-section images were obtained from the models at the mid-diaphysis. Biomechanical parameters were obtained with the BoneJ software, and statistical analyses were carried out to estimate differences between sexes in the shape index ($I_{\text{max}}/I_{\text{min}}$) of tibia (ambulatory activity), and in the bilateral asymmetry of the second polar moment of area (J) of the humerus (upper limb workload). There were no differences between sexes for the shape index of the tibia (male=2.21, female=2.11, $p=0.157$), from which we infer that there were no differences in ambulatory activity between sexes. In comparative terms, this value is similar to control, urban current populations. Regarding the humerus, no significant differences were observed between sexes for the asymmetry in the standardized polar moment of area (male=10.33, female=11.64, $p=0.703$), from which we infer that there were no differences between sexes in physical tasks involving the development of humeral asymmetry. We discuss the information that these results offer regarding the social structure of the Meroitic society represented by this cemetery.

8 THE ADDED VALUE OF CALCINED PARS PETROSA OSSIS TEMPORALIS AND TEETH TO THE STUDY OF PAST MOBILITY

Abstract author(s): Frère, Anneminne (Multidisciplinary Archaeological Research Institute - MARI, Vrije Universiteit Brussel; Analytical, Environmental & Geo-Chemistry Research Unit - AMGC, Vrije Universiteit Brussel) - Loeffelmann, Tessi (Multidisciplinary Archaeological Research Institute - MARI, Vrije Universiteit Brussel; Analytical, Environmental & Geo-Chemistry Research Unit - AMGC, Vrije Universiteit Brussel; Durham University) - Veselka, Barbara (Multidisciplinary Archaeological Research Institute - MARI, Vrije Universiteit Brussel; Analytical, Environmental & Geo-Chemistry Research Unit - AMGC, Vrije Universiteit Brussel) - Snoeck, Christophe (Multidisciplinary Archaeological Research Institute - MARI, Vrije Universiteit Brussel; Analytical, Environmental & Geo-Chemistry Research Unit - AMGC, Vrije Universiteit Brussel)

Abstract format: Oral

To date, several cremation deposits from archaeological contexts in modern day Belgium have been investigated using a multidisciplinary approach, whereby mobility was examined via strontium isotope analysis of calcined rib, diaphysis and cranial bone fragments. The strontium isotope ratios measured on these different skeletal elements showed a wide variation which, with reference to plant samples from the area, are suggestive of mobility and/or changes in landscape use during the last decade or so of the cremated individuals' lives. With few exceptions, these previous studies did not include the sampling of the pars petrosa (PP) and teeth, although these elements can provide information about childhood residence. The aim of this present study was to explore the potential of sampling early-forming skeletal tissues for strontium isotopes, and to compare the results to previously studied material.

Strontium isotope analyses were performed on the fully calcined PP and teeth from Herstal and Court-Saint-Étienne, two Late Bronze Age – Early Iron Age cremation sites in the region of Belgium. The inner cortex of the otic capsule (PP) was sampled. This part contains isotope ratios reflective of the strontium ingested during infancy and early childhood (up to 2 years of age). Furthermore, the teeth were determined whenever possible, since each tooth type represents a different age span. The differences observed between childhood (PP and dentition) strontium isotope ratios and those of continuously remodeling skeletal tissues (cranium, diaphysis, rib) were highly indicative of changes in diet or in the place of residence during the life of these individuals, allowing us to deepen our understanding of the sites in the context of the period.

This pilot study on cremation deposits from LBA–EIA Belgium demonstrates that including these skeletal tissues reflecting early childhood strontium intake is essential when trying to understand mobility of individuals and populations in the past.

9 EVALUATING MOBILITY IN THE NORTH PONTIC STEPPE IN THE 5TH MILLENNIUM BCE

Abstract author(s): Nikitin, Alexey (Grand Valley State University)

Abstract format: Oral

The Eneolithic period in the North and West Pontic regions is characterized by the formation of continent-wide interactions that involved the farming, salt-producing, and metalsmithing communities of the West Pontic and their nomadic steppe neighbors in the North Pontic. The establishment of the Balkan-Carpathian metallurgic center led to the emergence of trade in metal goods and technology between the producers of metal goods and the consumers of these products in the circum-Pontic area. Mediators of the trade activity were the steppe groups of the North Pontic belonging to the Serednii Stih (Sredny Stog) horizon. Within this horizon, the Suvorove-Novodanylivka (SuNo) archaeological complex is distinguished by its extravagant funeral inventory as well as its extension into the Varna-Karanovo VI-Gumelnița (VKG) territory in the eastern Balkans. Recent stable isotope and ancient DNA analyses revealed heterogeneity in genetic ancestry and subsistence of SuNo groups, likely connected with intra-regional mobility. Newly obtained radiocarbon dates suggest that SuNo disappeared as an archaeological culture shortly after the Black Sea level rise ca. 4200 BCE, coinciding with the demise of VKG groups in the west Pontic. It remains an open question whether SuNo actively contributed to the end of VKG, or if both culture groups fell victim to the same climatic transformations.

10 WHERE YOU GREW UP WRITTEN IN BONES: A RENEWED VISION OF SWISS ALPINE AGRO-PASTORAL SOCIETIES

Abstract author(s): Desideri, Jocelyne - Rosselet-Christ, Déborah (Archaeology of Africa & Anthropology Laboratory - ARCAN, University of Geneva)

Abstract format: Oral

The Swiss Alps are an exceptional territory, as much by its position at the crossroads of various spheres of influence as by the discoveries of major importance for the understanding of ancient periods. Our project concerns the study of neolithic societies across the Swiss Alps using an interdisciplinary approach by combining isotope geochemistry,

dental nonmetrics, aDNA analysis and palaeopathology to understand the evolution of diets, subsistence practices and mobility of these human groups.

While the studies are still in progress, we present here some of the results on mobility through the analysis of dental nonmetrics and isotopes analysis.

The study on dental morphology supports the idea of a certain mobility starting mostly during the Final Neolithic and developing during the Bell Beaker period in this region. A mobility that seems to come from Western Europe according to dental nonmetrics. Samples were additionally analysed for isotope values. The results obtained are consistent with those provided by the dental morphology, supporting the increase of individuals mobility during the late Neolithic in the Alps. In addition, these results reveal interesting elements about the individuals identified as having changed “geological residence” during their lifetime. More than 30% of the Late Neolithic population is outside the local values and this concerns adults and immatures. Nearly 30% of the Bell Beakers are outside the local values, but this is only for adults.

11 NEW PERSPECTIVES ON HUMAN MOBILITY IN LATE/FINAL NEOLITHIC BELGIUM USING STRONTIUM AND OXYGEN ISOTOPIC ANALYSIS

Abstract author(s): van Hattum, IJk (ArcheOs - Research Laboratory for Biological Anthropology, Department of Archaeology, Ghent University) - Costas-Rodriguez, Marta (Centro de Investigación Mariña, Universidade de Vigo, Departamento de Química Analítica y Alimentaria) - Hobin, Kasper (Atomic & Mass Spectrometry research group, Department of Chemistry, Ghent University) - Bodé, Samuel - Robert, Prudence (Isotope Bioscience Laboratory - ISOFYS, Department of Green Chemistry and Technology, University of Ghent) - Toussaint, Michel (Association Wallonne d'Études Mégalithiques, Liège) - Cattelain, Pierre (Cedarc/Musée du Malgré-Tout, Treignes; CReA-Patrimoine, Centre of Archaeological Research and Heritage, Free University of Brussels) - Vandendriessche, Hans - Crombé, Philippe (Department of Archaeology, Ghent University) - De Groote, Isabelle (ArcheOs - Research Laboratory for Biological Anthropology, Department of Archaeology, Ghent University)

Abstract format: Oral

In Belgium, human remains from the Neolithic period were mainly recovered from caves in the Meuse Basin. The funerary caves are characterized by multiple or collective interments and commingled remains. Some funerary caves date to the Middle Neolithic (ca. 4300-3700 cal BC), but most date to the Late and Final Neolithic period (3700 - 2000 cal BC) in Belgium. During the latter period, some of the dead were also interred in megalithic tombs. A cluster of dolmen extends over an elevated area, surrounded by cave burials in the lower river valleys. For a long time, these Late/Final Neolithic dolmen and funerary caves were attributed to the Seine-Oise-Marne (SOM) culture. Although the presence of the SOM culture in this region is no longer believed to be accurate, hypotheses of contact with Northern France and connections between the people that used funerary caves and dolmen remain. Diagnostic archaeological finds from burial contexts are scarce and the commingled state of skeletal remains limits the potential of standard osteological methods. Strontium and oxygen isotopic analysis of dental enamel can provide new perspectives on prehistoric human mobility on an individual level. This presentation reports the $87\text{Sr}/86\text{Sr}$ and $\text{O}-18$ values of 26 individuals from five Late Neolithic archaeological sites: Trou des Blaireaux (n=3), Grotte Ambre (n=4), Grotte de la Faucille (n=12), L'abri-sous-roche d'Hottemme (n=5), and the dolmen of Wéris II (n=2). Additionally, we present $87\text{Sr}/86\text{Sr}$ values of plant and faunal remains which function as local baselines. Based on the isotopic data several 'non-locals' could be identified. We explored what the isotopic data may reveal about places of origin, connections between the Late/Final Neolithic people from different funerary contexts, and contacts outside current Belgium. Lastly, we compared our findings to other isotopic mobility studies of Neolithic populations throughout Europe, to place the study in a wider context.

INTERDISCIPLINARY INVESTIGATIONS OF BURIAL COMMUNITIES OF THE AVAR PERIOD IN THE CARPATHIAN BASIN: MOBILITY, DIET, KINSHIP AND SOCIAL DIFFERENTIATION

Abstract author(s): Knipper, Corina (Curt Engelhorn Center for Archaeometry - CEZA) - Faragó, Norbert (Institute of Archaeological Sciences, Eötvös Loránd University) - Gneccchi- Ruscone, Guido (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology) - Rácz, Zsófia - Samu, Levente (Institute of Archaeological Sciences, Eötvös Loránd University) - Szeniczey, Tamás (Department of Biological Anthropology, Eötvös Loránd University) - Friedrich, Ronny (Curt Engelhorn Center for Archaeometry - CEZA) - Le Roux, Petrus (Department of Geological Sciences, University of Cape Town) - Vida, Tivadar (Institute of Archaeological Sciences, Eötvös Loránd University; Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network) - Krause, Johannes (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology)

Abstract format: Oral

The Early Middle Ages are an ideal context for interdisciplinary studies on the role and scale of residential movements of people in the past. Historical sources and cemeteries with excellently preserved skeletal remains and elaborated grave goods provide the framework for respective hypotheses and theoretical conceptions. The recent application of aDNA and isotope analyses in combination with archaeological, anthropological and historical investigations provides new data to reflect on migration and mobility. Here, we present a case study from the Avar period (late 6th to early 9th ct. AD) in the Carpathian Basin, which is part of the current interdisciplinary ERC HistoGenes project. aDNA analyses of entire cemeteries uncovered extensive multi-generational pedigrees, a residential system that was based on patrilineality, patrilocality and female exogamy, as well as indication of a community shift between the Early and the Middle Avar period. A subsample of the skeletal remains was tested for the isotope compositions of strontium in tooth enamel and carbon and nitrogen in bone collagen. The genetic identification of the presence or absence of the parents of the sampled individuals at the same sites provides a unique context for the exploration of questions on possible origins of founding individuals (i.e., lineage fathers), exogamous females (i.e., lineage mothers) and unrelated individuals. Strontium isotope data provided sparse indications for people coming from geologically different locations. They mostly suggest local residential continuity as well as regional connections among communities in similar environmental settings. A community shift that is supported by them carrying East Asian genomic ancestry, descending from Mongolian Steppe people and archaeological information is also reflected in $\delta^{13}\text{C}$ values that point to a decrease in millet consumption over time. Moreover, $\delta^{15}\text{N}$ data indicate higher shares of meat and/or dairy products in some male individuals that often accompany elaborated grave goods and reflect social differentiation.

ORIGINS OF THE EARLIEST FARMERS IN CENTRAL CHINA: A LITHIC PERSPECTIVE

Abstract author(s): Li, Weiya (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Departament d'Història i Història de l'Art, Universitat Rovira i Virgili; Department for the History of Science and Scientific Archaeology, University of Science and Technology of China)

Abstract format: Oral

The origins of early agricultural societies have been the subject of major interest for archaeologists over the past decades. China was one of the world's oldest primary centres of independent agricultural development. The most thoroughly studied early agricultural societies in China are located along the Yangtze and Yellow River Valleys, which provide some of the oldest firm evidence for rice (*Oryza sativa*) and millet (*Setaria italica* and *Panicum miliaceum*) farming respectively. Notably, the upper catchment of Huai River, a transitional climatic zone between northern and southern China, also has some of the first significant occurrences of cultivated rice, domesticated animals, and ground stone tools (i.e., stone sickles and stone shovels) that have been linked to agricultural practices at the archaeological site of Jiahu (9000 to 7500 BP), making this population the earliest farmers in Central China. One of the hypotheses is that the Jiahu people probably migrated from southern China along the coastline. This assumption is based on the evidence that sea levels have risen in Southeast China since around 20,000 years ago, thus humans who lived by the coast had to move to higher locations (e.g., Central China). This talk presents the project that explores whether it may be possible to link the Neolithic farmers at the site of Jiahu in Central China and their potential places of origin through their stone toolkits, from the technological, typological, and functional perspectives. Some preliminary results regarding the typology and technology of the chipped stone tools at Jiahu will also be presented.

INSIGHTS INTO THE MOBILITY OF MIDDLE PLEISTOCENE HOMININS

Abstract author(s): Riga, Alessandro (Department of Biology, University of Florence) - Profico, Antonio (Department of Biology, University of Pisa) - Mori, Tommaso (Department of Biology, University of Florence) - Bondioli, Luca (Department of Cultural Heritage, University of Bologna; Servizio di Bioarcheologia, Museo delle Civiltà) - Marchi, Damiano (Department of Biology, University of Pisa; Centre for the Exploration of Deep Human Journey, University of Witwatersrand)

Abstract format: Oral

Mobility can be intended as the study of seasonal movements across a landscape and it is part of the study of settlement systems (Kelley 1983); in this framework, mobility can be residential (all the group moves from a residential base to another) or logistical (individual or small groups move) (Binford 1980). Information on mobility from Middle Pleistocene is limited because fossils are scarce and often fragmented. Indirect evidence may be obtained by collecting data on the paleoenvironment such as : i) spatial distribution of the sites, ii) provenience of raw material, iii) isotopic evidences. Some of these works suggest a low range of residential mobility.

In this contribution, we approach mobility studies focusing on the analysis of human remains from a biomechanical perspective. Functional morphology and paleopathology are crucial to reconstruct the loading history of past individuals. A review of the Middle Pleistocene fossil record reveals a high prevalence of metatarsal stress fractures compared to later periods. Metatarsal stress fractures are linked to high levels of physical activity experienced by the individual. This evidence suggests high logistical mobility, likely for feeding purposes. In modern hunter-gatherers, two main mobility strategies have been recognized (Binford 1980): i) the foragers, who have high residential mobility and low logistical mobility; ii) the collectors, who have low residential mobility and high logistical mobility. Merging the information provided by different lines of evidence, we propose that Middle Pleistocene hominins experienced a mobility pattern typical of modern collectors, with low residential mobility and high logistical mobility.

AGE FOR A SLOW ARCHAEOLOGY, OR HOW TO SURVIVE IN THE NEO-LIBERAL FAST ACADEMIA [AGE]

Session theme: 6. Contested Pasts & Presents

Session organisers: Monton-Subias, Sandra (ICREA; Pompeu Fabra University) - Gaydarska, Bisserka (University of Durham)

Session format: Round table

In 2009, the first official meeting of AGE (Age and Gender in Europe) took place in the shape of a much-needed round table to discuss gender and archaeology in Europe. Fourteen years later, it is time to meet again within this format to discuss a concern that is gaining momentum among both members and non-members of AGE: how to survive in an individualistic and self-accelerated neo-liberal academia that increasingly demands devoting life to work.

This concern is especially pertinent for feminist archaeologists. Feminist archaeology has made other pasts possible through incorporating historiographic silences into its research agenda; through acknowledging dynamics related to the creation, maintenance, and recreation of life; and highlighting social bonds, affective capacity, interdependence, cooperation and care as foregrounding social life. Such discourses about the past have opposed the neo-liberal patriarchal logic that ignores what is fundamental to human life. Is it possible to also oppose this rationale in the professional practice of the present? How can such a drive co-exist with working in institutions and programs of power-knowledge guided by antagonistic inner logics that sustain and recreate neo-liberal patriarchy?

The diagnosis is clear. Departing from it, we seek to discuss different strategies to navigate these structural discrepancies without being engulfed or politically deactivated by a fast academic culture of productivity that: a) rewards instant revenue, production and accumulation at whatever cost, and technology fetishization; b) permits power abuse and patriarchal violence; c) penalizes critical reflective thought that delivers results in the long-term. We seek therefore to discuss how to practice a de-growth slow feminist archaeology that decelerates archaeology (and science). Now that we have made other pasts possible, how can we make other academies feasible?

Several speakers from different countries and academic backgrounds will present their insights as an initial step in a general debate.

THE RIVER BASIN AND ESTUARIES IN THE ANTIQUITY: ENVIRONMENT AND SETTLEMENT

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Lagóstena, Lázaro (University of Cádiz) - López-Medina, María-Juana (University of Almería) - Bivolaru, Alexandra (Ca'Foscari University of Venice) - Aragón-Nuñez, Enrique (University of Almería)

Session format: Regular session

This session focuses on the river basin and estuaries as a geographical unit of reference, already perceived by classical cultures, a space currently revalued as a critical unit for the management of the environment and water resources, especially in contexts of climate change. This session proposal for the Belfast 2023 EAA focuses on two main perspectives, the first of which is of a theoretical and conceptual nature, centred on the analysis of the perception, function, representation and conceptualisation of river basins and estuaries in Greco-Latin thought and its subsequent evolution. The investigation of their potential as a well-defined geographical space with specific territorial and legal problems, defined in classical sources, is a novel proposal in the national and European research panorama. The second perspective, of a practical nature, focuses on case studies representative of these contexts and can show historical problems linked to their occupation by past societies. The aim is to create a forum for discussion of case studies that show interconnected problems, preferably related to the characteristics and conditions of each of these environments – river basins and estuaries – which are always affected by the anthropic actions caused by practices in the field. Thus, issues such as population occupation strategies and their conditioning, economic exploitation, crops, forestation and deforestation processes, adaptation to the environment and resilient attitudes in adverse circumstances, water management, or practices in the face of phenomena such as floods, erosion and alterations to riverbeds, or sedimentation and geomorphological changes, are some of the topics that will be addressed in this session. Special attention will be given to the methodology applied to these archaeological contexts, where priority will be given to the use of novel research techniques, such as non-invasive methods, which have proven to be highly effective in recent years.

ABSTRACTS

1 THE MUNICIPIUM IGNOTUM OF GIBALBIN AND ITS FLUVIAL CONNECTIONS TO THE GUADALQUIVIR AND GUALETE BASINS

Abstract author(s): Lagóstena, Lázaro - Rondán-Sevilla, Isabel María (Universidad de Cádiz)

Abstract format: Oral

The archaeological site of Gibalbín (Jerez de la Frontera, Cádiz, Spain, Roman province of Baetica), originated in protohistoric times and occupied until the Andalusian period, shows characteristics of an urban settlement, although its ancient name is unknown. There are several archaeological elements that confirm its relationship with maritime exports. Its location is strategic, occupying the watershed between the river basins of the Guadalquivir and the Guadalete in its final stretch. Towards the Guadalquivir, to the northwest, the city was connected to the sea through the estuaries of the ancient Lacus Ligustinus, while the connection with the Guadalete River, to the southeast, could have been established through a wetland, today fossilized in the so-called Llanos de Caulina. In this contribution we analyze the role exercised from Gibalbín in the control of the territory and in the maritime-fluvial communications, through the connectivity of the site with the fluvial basins of both rivers.

2 THE OPPIDUM OF MEGABLUM: CONTROLLING THE SALADO DE CONIL BASIN (CADIZ, SPAIN) AND ITS ACCESS TO THE ATLANTIC COAST AND RESOURCES

Abstract author(s): Aragón, Enrique (Universidad de Almería) - Rondán, Isabel - Lagóstena, Lázaro (Universidad de Cádiz)

Abstract format: Oral

The archaeological site of Cerro Patria (Vejer de la Frontera, Cádiz, Roman province of Baetica) has been identified with the settlement of Mergablum mentioned by the itinerary sources (Antonine Itinerary; Anonymous of Ravenna). This oppidum, currently located approximately 7 km from the coast, controls the basin of the Salado de Conil, the mainstream in the area. This waterway would have connected the town to the Atlantic coast and provided access to a strategic area for tuna fishing and catching, as has been the case on this coast up to the present day, as shows the Castilnovo traps are located here, active in modern and contemporary times. The site has not been studied archaeologically to date, although, in a preliminary assessment, its occupation would not have lasted beyond the change of era, when the population was probably moved to what is now the town of Conil de la Frontera. Mergablum seems to have been a critical element in the territorial control and communications associated with the via Heraklea, and the

Salado river basin seems to have undergone significant transformations. In this contribution, we assess the archaeological reality of the site and its function of territorial control and coastal resources through the dominance of the river network and land communications.

3 SETTLEMENT AND ENVIRONMENT IN THE LOWER BASIN OF ANDARAX RIVER AND THE CABO DE GATA-NÍJAR NATURAL PARK (ALMERIA-SPAIN) DURING ANTIQUITY

Abstract author(s): López-Medina, María-Juana - Aragón-Núñez, Enrique - Román-Díaz, María-De-La-Paz - García-Pardo, Manuela - Martínez-Padilla, Catalina (University of Almería) - Lagóstena-Barrios, Lázaro (University of Cádiz) - Morhange, Christophe (Aix-Marseille-University; CEREGE) - Devillers, Benoît (Université Paul-Valéry - Montpellier 3; CNRS)

Abstract format: Oral

Examining an arid area such as the southeast of the Iberian Peninsula over time, river valleys and streams have been a magnet for the settlement of populations throughout history. In this specific case, we are going to focus on the eastern sector of the Bay of Almería (Spain), in the lower courses of the Andarax river and the wadis of the Cabo de Gata-Níjar Natural Park, such as the Amoladeras and Morales wadis, where we have carried out geoarchaeological surveys. The relationship between the settlement of the Roman period and the ancient palaeo-estuaries formed in these low basins will be discussed. In this sense, the territory studied includes relevant roman sites such as the city of Urci (El Chuche, Benahadux) and the port of Portus Magnus (Almería) concerning the palaeo-estuary of the river Andarax, documented by G. Hoffmann, or the officina purpuraria of Torregarcía (Cabo de Gata-Níjar Natural Park, Almería) linked to the Amoladeras stream.

4 POCITO CHICO AT LAGUNA DEL GALLO (SW SPAIN): A SETTLEMENT PATTERN IN AN ENDORHEIC PALEO-LAGOON

Abstract author(s): Catalán González, Francisco Javier - Ruiz Gil, José Antonio (University of Cádiz)

Abstract format: Oral

The case study of an inland water sub-basin (an endorheic lagoon) located between the mouths of the Guadalquivir and Guadalete rivers on the Atlantic side of the Iberian Peninsula is presented. This is a case study centred on the Laguna del Gallo, which was documented at the end of the 1990s using a traditional archaeological methodology, consisting of surface surveys, an archaeological excavation at the Pocito Chico farmhouse and a paleoenvironmental study based on the pollen analysis carried out at the site.

Recently, these investigations have been extended with geophysical surveys and aerial orthophotography by the Geodetection Unit of the University of Cadiz.

Based on this knowledge, the study of the paleo-lagoon is proposed for this work using LiDAR with the objectives of delimiting its outline, defining its basin and the collectors that communicate it with the main rivers and the georeferencing of the human settlements concerning the historical limits, positioning the settlement within a hierarchical historical pattern. All this information is worked with GIS methodology and the comparative analysis of cartography and historical photography, allowing the interaction between society-environment produced in this landscape environment to be specified.

5 SMALL STUARINE SYSTEM OF RIVER IRO BASIN. (BAY OF CÁDIZ, SPAIN). SETTLEMENTS, GEODYNAMICS AND HIDROSYSTEMS DURING ANTIQUITY

Abstract author(s): Ruiz Barroso, Manuel - Villalpando-Moreno, Antonio - Lagóstena, Lázaro (Universidad de Cádiz)

Abstract format: Oral

The aim of the work focuses on the study and delimitation of the basin of a minor fluvial channel associated with the estuary system of the Bay of Cádiz. It is the Iro River, a semi-permanent channel that articulates the maritime-land interconnection of Medina Sidonia and Chiclana de la Frontera, uniting important settlements from the

Orientalizing period to classical antiquity. At this area we can find connect through the river basin a Phoenician location at Cerro del Castillo (Chiclana de la Frontera), a settlement with remains from Bronze Age until Punic times at El Berrueco (Between Chiclana de la Frontera and Medina Sidonia), and the town of Medina Sidonia. The city of Medina Sidonia, roman Asido Caesarina, becomes the main human settlement in the River Iro basins. The historic remains of this city begins at Bronze Age and have continuity throughout the time until today. At ancient times, Iro River connect the ancient city of Asido Caesarina with Bay of Cádiz, but it could be used for navigation just in the river mouth area, far away from where town was placed. Therefore, we try to study a mixed connection, which used maritime and terrestrial transport.

As a novelty, characterization of the hydrological basin and the endorheic complexes attached to it, the relationship with the documented productive activities and communications are incorporated. It's intended to contribute to the knowledge of ancient settlement models related to minor waterways and the interrelation of settlement with historical hydrosystems.

6 MODELLING RIVER NAVIGATION IN THE PAST: GENERAL METHODOLOGY AND CASE STUDIES ON HISPANIC RIVERS

Abstract author(s): Trapero Fernández, Pedro (Cádiz University) - Aragón, Enrique (Almería University) - Carneiro, André (Évora University) - Catalán, Javier - Fernández, Pablo (Cádiz University) - Marques, Joana Margarida (Évora University)

Abstract format: Oral

In the past, rivers were strategic places to access water and the economic uses for it, but also because they were obstacles or communication routes. Except in cases where we know from literary sources the navigability of a river, it is very difficult to study if the river fulfilled the conditions for the transport of people and goods. In this paper, we propose a methodology using Geographic Information Systems to calculate the maximum navigable potential of a river at a given time. The method consists of three phases. First, we study the sources that indicate the navigation of each river or others nearby, whether literary or archaeological. Second, we study the natural factors that have modified this space, such as the sedimentary process, geology and others. Most rivers have extensive current hydrological analyses that facilitate this work. Third, we study the potential maximum water depth under certain conditions, either by tidal influence or sufficient flow of the river itself. To contrast this method, we applied this method to a case studies river. We focus on the Iberian Peninsula due to the differences between the Mediterranean Sea and the Atlantic Ocean in Roman Times. Especially in the roman province of Baetica, with three case studies, Guadalquivir, Guadalete and Barbate rivers. The navigability of the Guadalquivir is well demonstrated by ancient sources and studies and is therefore the basic case study for establishing comparisons. We also use as examples rivers from other Hispanic provinces as the Andarax and Almanzora (Tarraconense) and Tagus and Vouga (Lusitania).

7 SETTLING STRATEGIES OF HUMAN COMMUNITIES IN PANNONIAN HOLOCENE RIVERSCAPE. A MICROZONE CASE STUDY FROM BANAT (ROMANIA)

Abstract author(s): Floca, Cristian (Institute for Banat Studies "Titu Maiorescu" of the Romanian Academy, Timișoara Branch) - Sipos, György (Department of Geoinformatics, Physical and Environmental Geography, University of Szeged) - Gogâltan, Florin (Institute of Archaeology and History of Art of Cluj-Napoca) - Bartyik, Tamás (Department of Geoinformatics, Physical and Environmental Geography, University of Szeged) - Hegyi, Alexandru (Center for Southeast Asian Studies, Kyoto University, Kyoto; West University of Timișoara) - Filyó, Dávid (Department of Geoinformatics, Physical and Environmental Geography, University of Szeged)

Abstract format: Oral

Considering water as a vital resource around which human settlements have gravitated and thrived over time, we have developed a way to explore how the hydrological network from a landscape within the Eastern Pannonian Plain was used by Holocene human societies to their advantage.

Our study's carefully researched micro-zone is situated in the Banat region's lowland (today Romania), covers an area of about 5000 hectares and is naturally delimited by the Pogăniș stream alluvial fan. Here, we have been able to identify seven different generations of this stream, spatially separated, and more than 150 human settlements (from the early Neolithic to the present).

In an attempt to maintain balance between the benefits and disadvantages of living near a river, the communities swing in the choice of establish their settlement between joining an active river, a fossil channel or simply avoiding any watercourses.

Nevertheless, this aspect is quite difficult to understand without establishing an absolute chronology of each fossil river channel. Thus, besides generating a distribution map of historical human settlements, our aim is to recreate a part of the local paleo-hydrography by combining various methods.

The former human settlements were mapped through a systematic field survey of the entire area. The reconstruction of the paleochannel network in order to grasp the micromorphology of the occupied or uninhabited areas was carried out by using high-resolution LiDAR data. Finally, we drilled into the old riverbeds to collect sediment samples in order to perform Optically Stimulated Luminescence (OSL) dating for generating an absolute chronology for each paleochannel.

The correlation of these approaches results enables the reconstruction of the spatial and temporal relationship between the human of the past and the nearby water supply.

8 REMOTE SENSING APPLIED TO ARCHAEOLOGICAL LANDSCAPE ANALYSIS OF LOW GUADIANA MENOR RIVER WITHIN AQUIVERGIA PROJECT

Abstract author(s): Ortiz, Antonio (University of Jaén)

Abstract format: Oral

Interaction of ancient communities with their immediate surroundings are key aspect to understand the evolution of the landscape and how this relation has affected the surrounding landscape in especially sensible ecosystems such us river basins and estuaries. Being aware of the importance of such aspects on the configuration of Landscape and the knowledge that can be extracted about their exploitation, and how they can be extrapolated to present day initiatives, one can ask himself how can we identify the influence of human activities in ancient landscape beyond traditional methodological approach?

What I will show on this presentation are the first results of applying a multiscale and holistic methodology on which different aerial Remote Sensing techniques such us, Satellite Imagery, Lidar data analysis and aerial photography taken by UAV, have been used, analysed and combined between them focused on the identification and extraction of, till now, unseen archaeological information that will complement the already known information about the behaviour, occupation and exploitation of ancient communities. Also, these results will pinpoint key aspects that could serve as a base to focus on future terrestrial teledetection and archaeological field campaigns allowing to reducing time and costs in the study of a big area such as the river basin of low Guadiana Menor, especially focusing in the convergence area with Guadalquivir River within AQUIVERGIA project founded by Spanish Ministry of Science and Innovation.

9 HUNTER-GATHERER-FISHERMEN IN THE SALT MARSHES OF THE CABO DE GATA-NÍJAR MARITIME-TERRESTRIAL NATURAL PARK (ALMERÍA, SPAIN)

Abstract author(s): Román Díaz, María de la Paz - Medianero Soto, Francisco Javier - Calaforra Chordi, Jose María - Sola Gómez, Fernando - Moreno Márquez, Adolfo - López Medina, María Juana - Aragón Núñez, Enrique - García Pardo, Manuela - Berenguel, Manuel (University of Almería)

Abstract format: Oral

This communication is a first approach to the recent archaeological finds documented on the surface, adjacent to the salt flats of the Cabo de Gata Natural Park (Almería), southeast of the Iberian Peninsula.

The outcrop is located at the southeastern end of the Almería-Níjar basin, on sedimentary materials, at the transition between the most distal parts of an alluvial fan and a coastal lagoon. This fan erodes Miocene volcanic reliefs of the Cabo de Gata Volcanic Complex, composed essentially of andesites and dacites.

The archaeological material shows human presence in different periods of prehistoric times. This study focuses on part of this material, which exhibits configurations ascribed to Palaeolithic Mode 2 and 3 technocomplexes, showing carving on allochthonous matrix, the source of which is unknown. They are pieces on compact dolomitic sandstone and volcanic material, with ribs and retouches.

We are aware of the limitations of this proposal as they are records without stratigraphic context, the result of a selective survey within the framework of the AQVA project (UAL-FEDER, Proyectos I+D+i 2014-2020). Its allochthonous character informs of the mobility of the social group over a space that has yet to be elucidated, but which is emerged and passable, with the presence of older Tyrrhenian marine terraces that probably housed an extensive coastal lagoon used as a feeding and breeding area by a large number of birds, which would have made this enclave an especially favourable area for hunting and fishing.

10 TERRITORY AND WATER MANAGEMENT IN THE LOWER COURSE OF THE ANDARAX RIVER (ALMERÍA-SPAIN), DURING LATE ANTIQUITY TO THE MIDDLE AGES

Abstract author(s): García-Pardo, Manuela - Díaz Marcilla, Francisco José - Aragón -Núñez, Enrique - López Medina, María Juana - Román Díaz, María de la Paz (University of Almería)

Abstract format: Oral

Access to water is fundamental for developing territory management in any historical period. Based on this assumption and the environmental conditions of the area in question, this paper proposes to analyse the Lower Andarax's watercourses and the vegetation on their banks. We will also include the location of springs or non-significant natural water courses that do not appear in the current databases but are still continuous support for settlements. These had reduced flows, used to irrigate small land areas and for human consumption. This study aims to draw up a basic but detailed cartography of these enclaves, to confirm their presence or not in the historical documentation and, whenever possible, to verify their use and exploitation in the historical period in question. To this end, we will collect data in the field: through oral sources that older people, knowledgeable about the territory, provide us with testimonies of the existence of these sites, as well as through oral sources. The data obtained from oral sources will be compared with the

results of surface archaeological surveys of the study area. All this is to compare the presence of water and material evidence of its use in the Late Antique and Medieval periods.

11 SPATIAL ANALYSIS OF RESERVOIRS WITH PREHISTORIC SILOS IN THE SOUTHEAST PENINSULAR

Abstract author(s): Moreno Márquez, Adolfo - Román Díaz, María de la Paz - Medianero Soto, Francisco Javier - López Medina, María Juana (Universidad de Almería)

Abstract format: Oral

This communication presents a series of research proposals related to the study of Neolithic populations in the south-east of the peninsula. We will focus on the study and analysis of deposits that present underground storage structures, defined by a series of researchers as “silos”, which we understand as a clear example of the intensification of agriculture for these prehistoric populations. Currently the number of deposits with these characteristics and structures is not very high, compared to other areas in the south of the peninsula, since they do not reach ten, but it is very significant that the majority are concentrated in the Bajo Almanzora basin, one of the most important in the Mediterranean basins. This project intends to follow three lines:

- Analyze the area of concentration of this type of deposits in order to understand their cultural horizon.
- Analyze and value other environments- (river basins and estuary) in other areas through the use of non-invasive research techniques such as Geographic Information Systems (GIS). This analysis would help us to propose and raise other spaces or areas in which its location would be feasible.
- Check the capabilities and shortcomings of this object of study

These proposals can be the germ of future archaeological studies (prospecting and/or archaeological interventions) to propose new sites, while applying new techniques to those already known, enriching the investigation of these past societies.

12 NEW ENVIRONMENTAL DATA FROM THE RIVERBANKS OF THE ANCIENT LACUS LIGUSTINUS (SOUTHERN SPAIN)

Abstract author(s): Sánchez, Daniel Jesús (University of Cádiz) - Castro García, María Del Mar (University of Granada)

Abstract format: Oral

A new archaeological area was recently discovered in Haza de Santa Catalina (Sanlúcar de Barrameda, Spain). An in-depth ploughing has unearthed vestiges of different epochs, including a settlement dating back to prehistoric times and a previously unnoticed Iron Age necropolis of the ancient city of Eborá. The use of complementary techniques in this research contributes to a better understanding of the long-term evolution of the riparian landscape in the southern banks of the lacus Ligustinus (current Guadalquivir marshlands). A total of 15 samples of ash and charcoal were collected for palaeobotanical analysis, considering well-preserved blocks of earth and avoiding intrusive materials. Twelve samples were taken from the burial zone over the alignment of vestiges that were later identified by magnetometry as remains related to tumular structures. The aim of this presentation is to show preliminary results of this ongoing research and to discuss the implications of the environmental evolution at the zone, which points to a changing human impact on the estuarine landscape of the lacus Ligustinus.

A. THE CONFLUENCE OF THE GUADALQUIVIR AND GUADIANA MENOR RIVERS (JAÉN, SPAIN): AN APPROACH TO LANDSCAPE IN ROMAN TIMES

Abstract author(s): Fornell Muñoz, Alejandro - Guerrero, Francisco (Universidad de Jaén)

Abstract format: Poster

The spatial environment where the Guadiana Menor river meets the Guadalquivir constitutes an approximate area of 30,000 ha. of high environmental and landscape value, since it combines the land immediately adjacent to the river valley with others from the foothills of the Sierras de Cazorla and Mágina. In addition to its agricultural, salt and mining resources, it must be added that in ancient times this area was the shortest communication route between the Upper Guadalquivir and the Mediterranean coast. However, despite the potential for ancient anthropic activity that this territory offers, it has not been sufficiently investigated to detect the manifestations of Roman settlement, a matter of historical interest to understand the transformations of the landscape that occurred after the Roman conquest. The union of archaeogeographic analysis with textual, epigraphic and bibliographic sources establishes the starting point of this study, which also reflects on the importance of an archaeological survey that goes beyond the traditional methodology.

CONNECTING A CONTINENT: NEW DATA ON CENTRAL ASIA FROM THE MESOLITHIC TO BRONZE AGE [PAM]

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Dupuy, Paula (Nazarbayev University) - Shnayder, Svetlana (-)

Session format: Regular session

Central Asia situated in the heart of Eurasia – between the Caspian Sea and Xinjiang has served as a major crossroad throughout human history, linking societies from Europe to East Asia. The most intense occupation of this region was initiated during the Early Holocene at which point multiple technologies and social networks foreshadowed long-term and subsequent occupation of this landlocked region. Despite a long history of dedicated research in the region, however, several questions circulate on points such as how to distinguish the Mesolithic and Neolithic periods, when and how productive economies emerged in the Bronze Age or beforehand, and on suitable methodologies for locating early sites in the extreme environments of its high latitudes and mountainous regions. This session aims to facilitate a new dialogue concerned with the identity of social-technological-economic networks across the Mesolithic to Bronze Age while also considering the applicability of terms such as ‘margin,’ ‘center’ and ‘crossroads’ in Central Asian archaeology. Importantly, such considerations in a Central Asian context hold relevance at a European level for exploring the directionality, timing and context of migrations, core economic and material technologies, and belief systems which had lasting impacts on historical developments in both regions. We are particularly keen to see research that presents novel discoveries coming from excavations, new scientific findings from revisits to earlier research, and/or syntheses from big-data or pedestrian survey projects. We welcome papers that touch on material culture assemblages, human-environment reconstructions, and on bioarcheological and/or archaeological remains from macro- or micro-scale perspectives.

ABSTRACTS

1 CULTURAL VARIABILITY OF FINAL-PLEISTOCENE - EARLY HOLOCENE COMPLEXES IN THE CENTRAL ASIAN HIGHLANDS

Abstract author(s): Shnaider, Svetlana (al-Farabi Kazakh National University)

Abstract format: Oral

During the middle of the XX century, A.P. Okladnikov’s proposed to divide the Final Pleistocene-Early Holocene contexts of Central Asia on the basis of the presence of geometric microlithics (Okladnikov, 1966). The complexes with geometric microliths were classified as “mesolithic”, those without geometric microliths as “epipaleolithic”. His hypothesis was later supported by V.A. Ranov [Ranov, 1988], G.F. Korobkova [Korobkova, 1989] and T.G. Filimonova [Filimonova, 2007]. During the last decade, we conducted a two-fold approach based on new fieldwork and a reevaluation of already available collections. Based on techno-typological features and zooarchaeological evidences three cultural groups were identified in Central Asia during this period: Tutkaulian, Alayian, Obishirian. The recent dating of the sites and the study of their spatial distribution also confirmed that they are related to different chorological and geographical frames.

The analysis of Tutkaulian, Alayian and Obishirian complexes provided in frame of RSF project #19-78-10053, the correlations with South Kazakhstan provided in frame of project BR18574057.

2 SITE FORMATION PROCESSES AT TWO ROCK-SHELTER SITES OF THE OBISHIRIAN CULTURE IN AN ARID INTERMONTANE BASIN (KYRGYZSTAN, CENTRAL ASIA)

Abstract author(s): Brancaloni, Greta (Institute of Geological Sciences of the Polish Academy of Sciences) - Shnaider, Svetlana (Al-Farabi Kazakh National University) - Abdykanova, Aida (American University of Central Asia) - Krajcarz, Maciej (Institute of Geological Sciences of the Polish Academy of Sciences)

Abstract format: Oral

In the southern margin of the Fergana Valley, Obishir-1 and Obishir-5 are two archaeological sites of the Pleistocene-Holocene transition bearing archaeological material of the Obishirian culture. The region is situated at a crossroad that links east and north Asia with Europe and the Levant, and it is taken to be a crucial point on the West-East transfer route since Paleolithic times and until the medieval Silk Road. Recent studies on the faunal remains at Obishir-5 shed light onto the Neolithization process in Kyrgyzstan and more ambitiously in Central Asia. In particular, the sites are located in front of two rock-shelters at the toe of largely karstified limestone cliffs in a high-elevated and arid intermontane basin of the southwestern Kyrgyzstan. Geoarchaeological investigations have been carried out to give geologic context to the archaeological and faunal record, as well as for a better understanding of the site forma-

tion processes including post-depositional disturbances. A multi-aspect approach has been designed consisting of sedimentological, micromorphological, and geochemical analyses for the study of the sedimentary material, coupled with chronometric dating and the study of faunal assemblages, as well as artifact spatial distribution analyses. The information retrieved allowed to reconstruct the depositional history, traces of human-related activities, and paleoenvironment reconstructions at both sites. Importantly, the sites are both embedded in cliff-related talus deposits, but they faced slightly differing processes which were recorded throughout the sedimentary sequences. Confronting the Quaternary sequences at the two Obishir sites, the “human factor” emerged to be an important element in the accumulation, erosion and disturbance of the stratigraphic sequences.

The study was supported by the National Science Center of Poland, grant number 2018/29/B/ST10/00906, field-works at the Obishir-1 and Obishir-5 sites were supported by project RSF #19-78-10053.

3 SHEEP PALEOGENOMICS AND THE SPREAD OF DAIRY PASTORALISM ACROSS CENTRAL EURASIA

Abstract author(s): Hermes, Taylor (Max Planck Institute for Evolutionary Anthropology)

Abstract format: Oral

Dairy pastoralism has long characterized human ecology in the vast grasslands of central Eurasia, but the spread of this subsistence strategy across the steppes remains poorly understood. While Afanasievo communities (3300–2900 BCE) in the Altai Mountains of the Eneolithic purportedly represent the first pastoralists to occupy the Asian interior after migrations from the western steppes, earlier Neolithic dispersals of dairy livestock along alternative pathways to central Eurasia have yet to be fully explored. Later, during the Bronze and Iron Ages, complex movements of people and exchanges of technologies suggest that sprawling interaction networks were shaped by herding mobility. Since sheep were typically the dominant animal for ancient steppe pastoralists, genomic analysis of archaeological sheep is well suited to shed new light on the evolution of dairy pastoralism and attendant cultural dynamics in the steppes. This talk presents results of the ERC-funded project DAIRYCULTURES on the paleogenomics of sheep sampled across central Eurasia dating from 8000 BCE to CE 1000, using a combination of whole-genome deep sequencing and in-solution capture enrichment with a newly developed panel for ~1 million SNPs.

4 RETHINKING INTER-REGIONAL EXCHANGE IN THE BRONZE / IRON AGE TRANSITION: NEW DATA FROM KIMIREK-KUM 1 IN THE ANCIENT ZERAFSHAN DELTA

Abstract author(s): Rouse, Lynne (Eurasia Dept, DAI) - Stark, Sören (NYU, ISAW)

Abstract format: Oral

Roughly in the middle of the 2nd millennium BC, the Final Bronze / Iron Age transition remains a “dark age” in the archaeology of southern Central Asia. There are clear political, economic, and ideological breaks from the previous highs of the Bronze Age, and throughout the region a general downsizing of sites and prestige-oriented trade networks. These changes are often interpreted through the lens of collapse, referencing the peak of regional cultural inter-connectivity under the Oxus / Greater Khorasan Civilization in the late 3rd – early 2nd mill BC. Yet remarkable new data from the recently-discovered site of Kimirek-kum 1 (KK1), deep in the Kyzyl Kum desert of Uzbekistan, tells a different story, in which continuity and adaptation are key elements. Preliminary fieldwork has revealed a thriving copper production and white stone jewelry industry at KK1 at around 1200 BC, centered on the site’s 11-ha enclosure but covering at least an additional 32-ha of the surrounding landscape. Moreover, the small finds from KK1 – including objects and jewelry in precious metal and semi-precious stone – have direct material connections to known archaeological sites as far away as the Urals, northeastern Iran, and Afghanistan. KK1 thus appears to be a significant hub for prestige craft production and inter-regional exchange, specifically flourishing during a period best known for decline and insularity. Our presentation will include the preliminary results of excavation and survey investigations at KK1 as they relate to questions of resources and production chains during a time of significant economic, political, and cultural restructuring; we suggest that KK1 represents a potentially key “missing link” in the archaeology of the region.

5 A UNIQUE AND EARLY NEOLITHIC BURIAL FROM KOKEN (EAST KAZAKHSTAN)

Abstract author(s): Dupuy, Paula (Nazarbayev University) - Tashmanbetova, Zhuldyz (Washington University in St. Louis) - Kiyasbek, Galymzhan (Institute of Archaeology Kazakhstan) - Zhuniskhanov, Aidyn (Nazarbayev University) - Samashev, Zainolla (Institute of Archaeology Kazakhstan)

Abstract format: Oral

The period prior to the emergence of agriculture and pastoralism is one of the most understudied and least deciphered time periods in Eurasian steppe archaeology. A shortage of stratified or well preserved early Holocene campsites means that our knowledge of this period heavily relies on lithic assemblages not always with associated radiometric dates. Contrary to this norm, our excavations at the site of Koken in the semi-arid steppe zone of eastern Kazakhstan

recently uncovered stratified Stone Age deposits underlying a Bronze Age settlement. Within these earlier layers, our team has further discovered a unique and singular human burial dating to the mid-6th millennium BC, in the early Neolithic period. The Koken burial represents the earliest known, and directly dated, human remains within all of Kazakhstan, and hence offers scholars an exclusive opportunity to examine hunter-gatherer dispersals, lifeways, and population composition prior to the appearance of food producing economies in the region. In this paper, we consider the Koken site layout and contents as well as consider its potential utilization during this incipient period of human occupation. Crucially, on a preliminarily basis we further position the early Neolithic burial from Koken within the thin landscape of its regional contemporaries. While research is ongoing, future study of this site and period will be pivotal for understanding early Holocene human adaptations, dispersals, and food systems in the hyper-continental marginal steppe environment, as well as clarify social, cultural, and technological connections among hunter-gatherer populations of the Eurasian steppe.

6 THE DELGERKHAAN UUL SURVEY, MONGOLIA: PRELIMINARY RESULTS

Abstract author(s): Wright, Joshua (University of Aberdeen) - Honeychurch, William (Yale University) - Chunag, Amartuvshin (National University of Mongolia) - Pleuger, Sarah (University of Edinburgh)

Abstract format: Oral

The paper reports on a full coverage intensive pedestrian survey of a water rich region in the Southeast Gobi desert, Mongolia. Regional landscape archaeology here was supported by many excavations providing a robust chronological framework from the mid-holocene through the Bronze Age and beyond. The study focused on a core region, but also expanded into the larger surrounding landscape to provide broad regional context and test the centrality of their study area. In addition to a dense landscape of chipped stone scatters, showing engagement with mostly-vanished hydrology. The survey recorded an extensive and unique monumental landscape of the Eastern Steppe Bronze Age prone burial tradition alongside a longer contemporary habitation record. These demonstrate spatial complexity, monumental scale, asymmetric regional settlement patterns, and adaptation to the changing Gobi environment. The exactitude and rarity of classic late Bronze Age forms in the area elucidate the dynamics of monumental change across the region. Together these results provide a dense and rich dataset of regional archaeology at heart of arid Northeast Asia.

7 VISUALIZING LONG-TERM SOCIAL CHANGE IN PREHISTORIC EURASIA

Abstract author(s): Frachetti, Michael (Washington University in St. Louis)

Abstract format: Oral

Chronological and cultural typologies are the most canonical tools used to structure and communicate archaeological research of Eurasia, and especially its prehistory. Dominant paradigms such as the Neolithic or Bronze Age, and regional cultural assemblages glossed as socio-genetic communities heavily shaped 20th century archaeology, and have found revitalized usage in recent decades, as new methods and regional integrations draw the archaeology of Central Asia into novel scholarly domains which demand general tools to simplify communication and build heuristic analogues across vast arrays of data. This paper explores alternatives to this approach, turning attention away from material-chronological typologies toward the morphological nature of human practices seen as intersectional suites of economic, political, environmental, and social domains. Archaeological data and knowledge—through this lens—can be alternatively combined to visualize newly aggregated constellations of interleaved relationships within realms of economy, political structure, technology, and more. Seen through time, the morphology of these data is visualized as part of a complex matrix of change that ashews common typologies and teleological trajectories, instead promoting a nuanced understanding of the choices, decisions, interactions, and contributions of prehistoric communities to the long-term social ecumene of central Eurasia.

8 CEREAL CULTIVATION IN PASTORAL LANDSCAPES: STABLE ISOTOPE ANALYSIS OF EARLY WHEAT AND BARLEY IN THE BRONZE-AGE INNER ASIAN MOUNTAIN CORRIDOR

Abstract author(s): Ritchey, Melissa (Washington University in St. Louis)

Abstract format: Oral

In the following millennia after domestication in Southwest Asia, wheat and barley spread through the Eurasian landmass. Recent research provides pathways of travel for these grains, but how local communities incorporated these novel grains and cultivation systems into their local subsistence strategies is still unclear. Particularly important to this Prehistoric Food Globalization process, which occurred between the 3rd and 1st millennium BC, is the Inner Asian Mountain Corridor, a region encompassing the foothills, mountain valleys, and mountains of Inner Asia, primarily those of the Dzhungar, Tianshan, and Altai Mountain ranges. The IAMC was home to pastoralist communities, who beginning in the Bronze Age (3rd millennium BC) adopted plant cultivation, as evidenced by macrobotanical remains of grains, chaff, and weeds of cultivated fields. In an ecological region that facilitates pastoralism, how much investment did these communities dedicate to this new, non-mobile subsistence activity? Drawing on stable isotope

analysis of wheat and barley grains from one of the earliest sites in the IAMC, this paper will investigate the labor investments, specifically watering and manuring of agropastoralists at Chap I and II, a multi-phase site located in the eastern Kyrgyzstan (c. 2467-2047 ca. BCE, 1065-825 ca. BCE). Chap I and II, 2,000 m.a.s.l. had an agropastoral economy based on sheep/goat husbandry with crop cultivation. The recovery of the largest assemblage of cultivates in the region, including multiple varieties of barley and wheat, along with potential irrigation works suggest local cultivation of these domesticates. Stable isotope analyses on these grains clarifies the irrigation and manuring activities at Chap and lends to further discussions on grain cultivation across Central Asia in prehistory.

9 CHANGES IN A SMALL COMMUNITY. NEW PERSPECTIVES ON BURIAL CUSTOMS IN LISAKOVSK (KOSTANAY OBLAST, KAZAKHSTAN)

Abstract author(s): Schreiber, Finn (Independent researcher) - Usmanova, Emma (Saryarka Archaeological Institute of Buketov Karaganda University)

Abstract format: Oral

The Late Bronze Age in the Central Eurasian steppes was characterized by a complex network of closely interconnected material cultures, called the Srubno-Andronovo phenomenon. A complex sequence of migratory events is usually reconstructed to explain its emergence. Other scholars have cited acculturation as the driving force behind the phenomenon. Indo-European origin theories and aDNA results have made the picture even more complex. At the same time, the archaeological data base is still very uneven across regions, making comparisons difficult.

One well-studied Late Bronze Age site is Lisakovsk in Kostanay Oblast (Kazakhstan), which consists of seven fully excavated burial grounds and one settlement. In this paper, the diversity and dynamics of burial traditions in Lisakovsk are analyzed using single and multivariate statistical methods on funerary pottery. Significant changes are visible in the field of ceramic typology, which serves as a marker for chronological determination. Burial customs gradually changed due to the abandonment of kurgan burials with wooden chambers and the rise of the cremation burial custom. At the same time, kurgans lost their importance as landmarks, and communal cemeteries spread.

The discussion about the cultures present in Lisakovsk is a long-lasting debate. For the interpretation of the results, we propose a different approach, describing the Upper Tobol area in the Bronze Age as a borderland where local communities were influenced by different burial traditions at different times. This model does not exclude human mobility, but emphasizes the legacy of a local community.

10 MONUMENTAL BURIALS AND EARLY PASTORALISM IN THE GOBI: A CASE STUDY FROM SHIRIIN CHULUU SITE

Abstract author(s): Dashzeveg, Bukhchuluun (Department of Anthropology, Yale University)

Abstract format: Oral

The Gobi Desert and the Eastern steppe of Mongolia witnessed a sudden emergence of burial construction during the Late Bronze Age. During the second half of the second millennium BCE, residents of this vast region began to build burial structures made of stone, in which the deceased were interred in a prone position, and the surface stone feature had shapes in the form of an hourglass or rectangles varying in size. Explanations for what seems to be a sudden rise of these “prone burials” have relied on a range of factors, including the emergence of social hierarchy, migration from the south, and reorganization of the local economy and the establishment of new integrative social institutions, as well as the spread of early shamanism. However, based upon the latest studies, we now understand that the people who built these burial monuments possessed most if not all of the common domestic herd animals (goat, sheep, horse), practiced a developed dairying tradition, and were engaged in networks of interregional exchange based on the tripod ceramic vessels, bronze objects, and semi-precious stone artifacts, all of which are found in burial assemblages.

11 THE THREE-DIMENSIONAL MODELS IN THE MORPHOMETRIC ANALYSIS OF CORES FROM OBISHIR-5 AND KHODJA-GOR SITES (FERGANA VALLEY, KYRGYZSTAN)

Abstract author(s): Markovskii, Grigorii (-) - Alysher kyzy, Saltanat (-) - Charynov, Temerlan (Kyrgyz national university named after Jusup Balasagyn) - Abdykanova, Aida (American University of Central Asia) - Shnaider, Svetlana (-)

Abstract format: Oral

Angle between striking platform and reduction surface – one of the most important morphometric parameter in definition of knapping technique for lithic industries in Late and Final Stone age. While detailed technical and typological description of lithic collections from Obishir-5 and Khodja-Gor sites (South Fergana Valley) it turned out that most cores are small, severely depleted, damaged, with traces of final adjustment and removal. Consequently, measurement by mechanical instrument of the angle between striking platform and reduction surface was not precise. How-

ever, the use of high-quality scalable 3D-models allowed to obtain required angle values, and also to calculate the core's volumes (Obishir-5 – 41 pcs, Khodja-Gor – 21 pcs) and compare the final data.

As a result, the average angle for cores with signs of pressure technique was: Obishir-5 – 87.7°, Khodja-Gor – 86,2°; with signs of percussion: Obishir-5 – 78.3°, Khodja-Gor – 74,9°. In volume artifacts of the first group were 3-4 times smaller and more standardized. The results of the analysis of three-dimensional models confirm our conclusion of the using two types of knapping technologies made by traditional morphological analysis. In the course of this work, was demonstrated the effectiveness of applying the three-dimensional modeling to study and compare archaeological collections.

12 NEW DATA ON EASTERN CASPIAN MESOLITHIC AND NEOLITHIC

Abstract author(s): Alisher Kyzy, Saltanat (independent researcher) - Shnaider, Svetlana (independent researcher)

Abstract format: Oral

Southeastern Caspian was a likely a migration route for early people moving from Near East into Central Asia. Because of its central geographic setting, the area also channeled cultural and technological influences and exchange between adjoining regions in prehistoric time. Mesolithic and Neolithic complexes of Eastern Caspian are represented by a few sheltered sites with stratified deposits (Kaylu, Jebel and Dam-Dam Cheshme-1 and 2). The site was excavated by A.P. Okladnikov (1950's) and G.E. Markov (1960's) and the archaeological materials from the excavation were divided between the several research centers of Russia and Turkmenistan. This research is based on the chipped stones stored in the Institute of archaeology and ethnography SB RAS, from three key archaeological sites – Dam-Dam-Cheshme-1, Dam-Dam-Cheshme-2 and Kaylu obtained by A.P. Okladnikov. Our study reveals key similarities, suggesting that the Dam-Dam-Cheshme-1, Dam-Dam-Cheshme-2 and Kaylu techno-complexes belong to a single Meso-Neolithic culture – which we refer to as the Eastern Caspian – split into a four-stage developmental sequence. We argue that the Eastern Caspian Meso-Neolithic industries, defined by blade/lete industry and an abundance of geometric microliths, with a chronological progression from lunate, scalene triangles to trapeze forms, has its origins in the Southern Caspian Mesolithic emerging.

A. BIOARCHEOLOGICAL INSIGHTS INTO HEALTH AND CULTURAL PRACTICES ON THE ANCIENT TIBETAN PLATEAU IN CENTRAL ASIA

Abstract author(s): Cao, Doudou (Department of Archaeology, University of Cambridge)

Abstract format: Poster

Despite great advances in Central Asian archaeology, little is known about ancient human lives and adaptability in the extreme environments of the Tibetan Plateau in hinterland Asia. To address this issue, this study reports preliminary results from the examination of human remains from the Phiyang-Dungkar group of sites in Ngari Prefecture of west Tibet (altitude 4,030-4,200m asl), to document demographic information and evidence for health, activity and funerary practices during the Early Metal Age (800 BCE – 900 CE).

Human skeletons were examined from 48 burials, yielding at least 69 individuals (25 females, 12 males, 32 undetermined sex). There were 10 non-adults (<16), 15 young adults (16-34, with fused acetabula), 20 middle-aged (35-49) and 10 old (>50) individuals, and 14 age-indeterminate adults. The caries rate at Phiyang-Dungkar (6% of teeth) was much lower than nearby contemporaneous lowland agriculturalists (>10%), while periodontal disease (71% of individuals), tooth wear and antemortem tooth loss (67% of individuals) were prevalent, likely reflecting a less cariogenic and abrasive diet than lowlanders who consumed more cultivated crops (e.g., millet). The low frequency of enamel hypoplasia (1.5% of teeth) and absence of cribra orbitalia and porotic hyperostosis suggest relatively low stress conditions during growth. High individual rates of 'kneeling facets' on the first metatarsal (40%) and 'squatting facets' on the ankle (74%) suggest repetitive postural behavior, while the frequency of individuals with osteoarthritis (45%) and degenerative disc disease (83%) suggests high physical activity levels. Taphonomic changes included sun bleaching and postmortem damage from human/animal activities. The underlying mechanism and/or cultural motivation for these phenomena will be explored in the future to better understand mortuary practices at the site.

Overall, the combined evidence provides unique insights into the demography, health status and potential cultural practices of ancient inhabitants of the vast Tibetan plateau in Central Asia.

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Da Vela, Raffaella (SFB 1070 RessourcenKulturen University of Tübingen) - Heitz, Christian (Leopold-Franzens-Universität Innsbruck) - Klocke-Daffa, Sabine - Frauen, Wulf (SFB 1070 RessourcenKulturen University of Tübingen)

Session format: Regular session

Can archaeological research be ‘objective’? And how much does the background, formation and mentality of the researcher affect their observations? We would like to open a debate on reflexivity and positionality in archaeological practice. Both are well established in Cultural and Social Anthropology as necessary forms of self-reflection during participant observation and fieldwork. These terms indicate an awareness of our own personal backgrounds and their impact on the collection and analysis of data. Self-reflexivity can be a useful, if not essential, epistemological tool for interpreting archaeological data, making scholars aware of their biases, especially regarding topics with distinct political or ideological impacts. Examples include studies on ancient mobility and migrations, as well as on the concepts of ethnicity and identity, and on the definition of alterity. Some concrete references in the history of archaeological research are provided by the discussions on Romanisation, the origin of the Etruscan, prehistoric and late antique migrations, ancient ethnicities in the Balkans, racism in Classical antiquity, and on the use of palaeogenetics.

This session deals with the issue of bias in past and present research on ancient mobility and identities. It invites us to rethink the relationship between archaeologists and the archaeological record as an intersubjective and interpretative process. The session will raise, amongst others, questions such as: in which form can positionality be introduced into archaeological research? Are data collection and methodology subjective, and in what ways? What can archaeology learn from anthropological reflexivity? The session addresses anthropologists and archaeologists alike and welcomes contributions on any aspects, including the analysis of consciousness of unconscious (uses of) positionality in past (archaeological) research, discussions of possible future perspectives that will make research biases more explicit, and the integration of the researcher’s own background in publication processes.

ABSTRACTS

1 ASK THE MAN IN THE MIRROR – A PLEDGE FOR REFLEXIVITY IN THE ANTHROPOLOGY AND ARCHAEOLOGY OF IRAN

Abstract author(s): Frauen, Wulf (SFB 1070 RessourcenKulturen)

Abstract format: Oral

In 1986 an edited volume by James Clifford and George Marcus shook the foundations of anthropology: *Writing Culture*. Previously anthropologists had still, although the façade had shown serious cracks before, believed that foreign cultures can be objectively described in accordance with a positivist ideal of science. Subsequently, it was acknowledged that this seems to be impossible and the best one can hope for is the glimpse at a ‘partial truth’, to say it in the words of Marcus. Consequences of this fundamental epistemological insight have been manifold: experimental forms of writing, sharing the authorship with explored by raising their voices in the account and a well-reflected subjectivity instead of pretended objectivity. Neighbouring disciplines reacted to what was going on in anthropology in different ways. In the case of archaeology, the reaction can be summarized with two words: mostly ignorance. The present contribution strives to raise an awareness that also in archaeology a certain extend of self-awareness is fruitful, if not necessary. I will illustrate this claim by examining a couple of examples from Iran. In the Iranian case, especially the intersection between nationalism and archaeology is striking. In past and present, various authors were embedded deeply in nationalist discourses. Whether they were (and are) aware of this or not remains obscure since it is never addressed in their accounts. An analysis of some of these discourses will show that Iranian archaeology runs risk to write past societies just like the iconic ethnographer on the cover of *Writing Culture*, sitting on the porch of a thatched hut with pen and notepad, writes his culture.

2 GETTING BEYOND VULNERABILITY AND ADAPTATION; MIGRATION AS A RESILIENCE STRATEGY

Abstract author(s): Maziar, Sepideh (Goethe university)

Abstract format: Oral

Migration as a part of human behavior and cultural transformation has taken on once again among archaeologists, anthropologists, and other social sciences. In the social sciences, there are different narratives of migration. In archaeology, however, this theme is conventionally tackled in many cases within an old-fashioned traditional framework. Accordingly, some scholars considered it a mono-factorial approach overlooking the complexity and diversity of other

factors at play. Some others ignore it, not be regarded as anachronistic scholars or trapped in culture-historical or diffusionist paradigms.

In this paper, I argue that part of the problem is that in archaeology, like other disciplines, migration is generally addressed within two primary contexts: 'vulnerability' and 'adaptation'. In this context, migration is often framed in cause-effect models such as push and pull factors. Reviewing different case studies, it seems that we still are trapped in the determinism of migration research and a top-down approach with causative relationships. May adopting approaches from other disciplines curve a new way, rid us of the cubic mindset, and enable us to acknowledge the multi-dimensionality and potential merits of migration. Accordingly, it is argued why migration studies should not be confined to pull and push models and what are their pitfalls and drawbacks. A distinct perspective, namely the resilience approach, is proposed as an alternative and supplementary approach. It is discussed how applying this framework extends our scope regarding human movement. As a case study, by using vulnerability and resilience as analytical tools, the Kura-Araxes's migration, as one of the largest diasporic communities during the 3rd millennium BCE in southwestern Asia, is interrogated. Applying 'resilience theory' in the frame of social resilience and translocality provides a new and different narration of Kura-Araxes migration, its triggers, mechanism, and dynamics, which is the main focus of this paper.

3 RESEARCHER POSITIONALITY IN COMPLEX „SHATTERZONES“: A SELF-REFLEXIVE CASE STUDY FROM THE ADRIATIC REGION

Abstract author(s): Bernardo-Ciddio, Leah (University of Michigan)

Abstract format: Oral

Archaeology looms large in the history of modern relations between states sharing the Adriatic Sea. Archaeology was weaponized to legitimate Italian irredentist and imperialist aims; a fixation on ancient objects underpinned Slovenian nationalist claims to an ancient identity that distinguished them from other South Slavs; Illyrian heritage was and continues to be an important part of Albanian national consciousness.

Some researchers feel a world apart from such examples, especially if fieldwork takes place away from "home". I argue that it is important not only to address openly the legacies of our field and methodology in our areas of study, but also to consider the way internal perspectives and external perceptions shape our work and how we are understood and engaged by colleagues.

In the interest of self-reflexivity, I share questions I have either asked myself or been asked by others about my research - to what extent should I, shifting between outsider and insider, reckon with the difficult history of archaeology, imperialism, war, and nationalism in the Adriatic? How am I perceived, and by whom? What is the impact of my positionality on how my work is presented to and interpreted by others? Do I have a personal and/or scholarly responsibility to acknowledge painful legacies? Are responsibilities shared differently between scholars from different nations around the Adriatic, have they been fulfilled, and is there agreement that they need to be fulfilled? Do today's politics make these questions relevant again or can we ignore politics? Should we? Who is "we" anyway?

In this paper, I argue that it is essential and sometimes even obligatory to think through our positionality, that of our colleagues, and that of our scholarly forebears, and that of living communities. Such an exercise both improves dialogue and can address awkward silences that hamper true collaboration and reconciliation.

4 RIDE ON? CONCEPTS OF MOBILITY IN ARCHAEOLOGICAL RESEARCH OR THE GRACE OF IGNORANCE

Abstract author(s): Heitz, Christian (Institut für Archäologien, University of Innsbruck)

Abstract format: Oral

In archaeological studies, the question of movement was always paramount – where and how did material objects move, and (later) what were the mechanisms and motivations behind this 'mobility'? However, in models like the spread of farming, focus was placed largely on unidirectional, linear and irreversible ("diffusionist") movements, with an inherent teleological attitude placing present social and economic conditions at the top – i.e. the conditions in which modern researchers are situated. It seems questionable whether this position in space, time and society enables us to understand past conditions.

In particular the paper refers to mobile pastoralism, a lifeway that in modern western scholarship (i.e. in societies where it is largely abandoned and almost forgotten) is much more rarely addressed and postulated as a possible model (although attested in ancient sources) than in areas like the steppes of Asia where mobile herding is still practiced on a larger scale. The centralised political structure and territorialized nature of property ownership in most modern agrarian societies is completely different from mobile communities whose "rhizomic and transversal" lifeways from a sedentary viewpoint appear transitory – mobile groups like transhumant herders lie outside the normative framework of (agrarian and sedentary) modern social relations and were often described as causing conflict, chaos and disrupt-

tion. In the light of the continuous marginalization it seems indeed doubtful whether modern scholarship can take a “neutral” approach to this topic. The danger of taking a ‘scholastic view’, as Bourdieu described a distanced, theoretical intellectual perspective shaped by ignorance and the assumption of rational choices for human behavior taken by most researchers – seems great. (How) Can we move on from such a position?

5 THE MYTH OF THE ETRUSCAN COLONIZATION IN THE PO VALLEY. A MISUNDERSTOOD MEMORY?

Abstract author(s): Da Vela, Raffaella (SFB1070 RessourcenKulturen University of Tübingen)

Abstract format: Oral

This paper proposes a review of the narratives around the so-called ‘Etruscan Colonization’ of the Po Valley, considering them as a prime example of the importance of positionality in archaeology. The presence of Etruscan funerary monuments and inscriptions from the 7th to the 5th century BCE in this region has long been considered a confirmation of the colonial presence of the Etruscans. This colonization is also reported in the later Latin literary sources, such as Livy, Polibius, Servius, and Strabo. Archaeological research was particularly receptive to these narratives in those periods where colonial thought matched the general political and ideological atmosphere, such as at the end of the 19th century and in the first half of the 20th century CE. Today, new findings and systematic excavations permit us to reframe our interpretation of the ancient sources and archaeological findings, leading to alternative models. The idea of colonization has thus been replaced by more fluid concepts, such as contact zones, regional identities, and multiculturalism. In this new frame, funerary monuments, inscriptions, and literary sources mentioning colonisation are intended as an ancient means serving to construct the collective cultural memories of local communities. Although these new perspectives seem to be a step forward in comparison to the previous narratives, they are also affected by our modern sensibilities and backgrounds. After comparing the different positions on the question, this paper will discuss the constitutive function of positionality in studying the Etruscan colonization. To what extent is it possible for the contemporary scholar to be objective? Should archaeologists take into account the intention of ancient actors or rather propose global interpretative models? Finally, can the question of the Etruscan colonization teach us anything about the history of culture over the last two centuries?

6 THE EMERGENCE OF GALLIC STUDIES IN ITALY: BETWEEN NATIONALIST AGENDAS AND KUHNIAN REVOLUTIONS

Abstract author(s): Saccoccio, Fabio (University of Nottingham, Department of Classics and Archaeology)

Abstract format: Oral

The late 19th century marked in Europe the birth of many national states as, more or less, we know them today. It was a period characterised by strong nationalist agendas and conflicts. Battles, however, were not only fought on the battlefield; Archaeology was one of the means by which legitimation over newly conquered territories was sought (e.g. the battle between Prussia and Denmark over Schleswig-Holstein and the role played by Jens Jacob Asmussen Worsaae).

The Italian territory was unified by the House of Savoy in 1861. In 1871, the German Empire was established, and Rome became the capital of the Kingdom of Italy (1861-1946). In scientific terms, the 1871 is regarded as a ground-breaking year for a crucial conference held at Bologna, the so-called V.me Session of the Congrès International d’Anthropologie et d’Archéologie Préhistorique (5th International Conference of Prehistoric Anthropology and Archaeology), which was organised with the blessing of the then Prince of Piedmont, his majesty Umberto Count of Savoy. In the literature, it is seen as the event which led to the emergence of Gallic studies in Italy.

This paper shall discuss the political, historical and scientific entanglements linked to this crucial Conference. Particular focus will be given to the reasons why Italian scholars resolutely rejected the idea of a Gallic past in Italy, the moment when a shift in the debate took place and, most importantly, the time-lag occurred for the new paradigm to be accepted and so being labelled as a scientific revolution sensu Kuhn.

7 THE CELTS IN BRITAIN AND IRELAND

Abstract author(s): Collis, John (University of Sheffield)

Abstract format: Oral

In a recent television programme the actor Ardal O’Hanlon explored his Irish ancestry using archaeological and historical data, but was rather surprised to find there were doubts about whether there were Celts in Ireland, or whether they had even ever existed. This contrasted with a much-criticised series on the Celts by Neil Oliver in 2015 in which he presented a very traditional picture of the Celts being slowly squeezed westward by Roman and Germanic expansion, surviving only on the fringes of, or outside, the Roman Empire in Ireland, Wales and Scotland. In this paper I present my own views based on historiographical studies showing that the ancient inhabitants of Britain and Ireland,

though speaking Celtic languages, were never considered to be Celts, and how a new Celtic identity was forged in post-medieval times along the Atlantic coast from Brittany to western Scotland. I reflect on the use of ancient sources from which to seek the 'origins' of modern ethnic groups – my own historical identity as a 'West Saxon' is one which has no meaning in modern Britain!

360 MIGRATION AND MOBILITY IN THE VIKING AGE FROM THE BALTIC TO THE BLACK SEAS: AN INTERDISCIPLINARY APPROACH

Session theme: 6. Contested Pasts & Presents

Session organisers: Shiroukhov, Roman (Centre for Baltic and Scandinavian Archaeology - ZBSA) - McCullough French, Katherine (School of History, Archaeology and Religion, Cardiff University) - Jahn, Christoph (Centre for Baltic and Scandinavian Archaeology - ZBSA) - Kozakaitė, Justina (Faculty of Medicine, Vilnius University) - Baranov, Vyacheslav (Institute of Archaeology of the National Academy of Science of Ukraine)

Session format: Regular session

Eastern Central Europe was a vital zone of interaction during the northern European Viking Age (9th to 11th centuries AD), linking Scandinavia to Byzantium and the Islamic empires. The Scandinavian presence and interactions with the local cultures at this time is a long-discussed and still poorly understood phenomenon. Scandinavian artefacts appear along the Baltic coastlines in numerous burial grounds. The impact extended as far as the Black Sea region.

Increased mobility of people, animals and goods is a defining feature of the Viking Age with evidence drawn from archaeological, anthropological and historical sources. Recent research and discoveries in the Eastern Baltic region and Ukraine provide a more comprehensive picture of population movements that extends far beyond Scandinavian incursions or trade settlements across Europe. Projects like Ostriv (Germany-Ukraine), Ribe (Denmark) and Salme (Estonia) have utilised modern laboratory techniques, including AMS C14 dating to refine regional chronologies, isotopic studies and physical anthropology to reconstruct mobility and diet, and aDNA to detail impacts on the modern European genome. New finds from Poland, the Baltic States, Bulgaria and the Ukraine have made it possible to take a broader look at the "Varangians" phenomenon from an eastern perspective.

This session presents the state of the art of Viking Age mobility research from the perspective of the southern and eastern Baltic Sea region with a reference to the latest research from Scandinavia to the Black Sea. We welcome papers exploring this topic and bringing together the latest results and projects in this thematic field in a broad methodological framework. Our aim is to present a diverse range of data from traditional archaeological, archival studies as well as innovative scientific, anthropological and biomolecular approaches.

ABSTRACTS

1 ADOPT, ADAPT, IMPROVISE? BALTIC IMPORTS AND LOCAL CONTEXTS IN DENMARK

Abstract author(s): Jensen, Bo (Kroppedal Museum)

Abstract format: Oral

Objects travel better than people. People travel better than ideas.

In the last few decades, metal detecting has revealed nine miniature combs in Denmark, and four in England. Five older finds are known in Sweden, one from a grave (Munksön, Uppland), the others stray. These finds highlight the importance of the trading route on River Draugava as an alternative to the bay of Estonia. They also illustrate selective cultural adaptation: combs were copied locally, but reinterpreted as miniature strike-a-lights, a symbol already potent in Scandinavian culture.

Three known individuals from eastern Denmark had filed teeth, normally a Gotland feature. Two are adult men, perhaps Gotland travelers, but the last is a teenage boy. Again, we can see how ideas travelled, and were sometimes adopted locally.

Another intriguing Gotlandic find is the box brooch from Fyrkat, Denmark. Found in the richest grave at the grave site belonging to this round castle, it can be read locally as a reference to the castle's plan.

Thus, we can see both immigrants (Munksö woman, Galgedil man, Snubbekorsgård man) and objects decontextualized and reimagined.

2 BEING (NON-)LOCAL AT VIKING HAITHABU - PREDICTING THE LOCAL ISOTOPIC FINGERPRINT OF ARCHAEOLOGICAL ANIMALS AND HUMANS USING MODERN ENVIRONMENTAL SAMPLES

Abstract author(s): Göhring, Andrea (Christian Albrecht University, Faculty of Engineering, Department of Computer Science, Information Systems and Data Mining; Ludwig Maximilian University, Faculty of Biology, Department of Biology I, Anthropology and Human Genomics) - Hölzl, Stefan (RiesKraterMuseum Nördlingen) - Mayr, Christoph (Friedrich Alexander University Erlangen-Nuremberg, Institute of Geography; Ludwig Maximilian University Munich, Faculty of Geosciences, Department of Earth and Environmental Studies) - Strauss, Harald (University of Münster, Institute of Geology and Palaeontology)

Abstract format: Oral

Stable isotope fingerprints of modern environmental samples (plant, soil, water) are used to establish isotopic baselines which allow to identify non-local animals/humans at a site. In coastal environments, these samples are prone to the so-called sea spray effect resulting in a seemingly marine isotope signal. This effect is also found in animals and humans from coastal regions and was proven to affect archaeological animals and humans from Viking Haithabu, located at the Schlei inlet close to the Baltic Sea. The individuals' isotopic signature can be highly misleading with respect to diet, habitat, or provenance reconstruction. It is, thus, important to predict the local isotope signature while also considering the local sea spray effect.

In this study, we demonstrate that it is possible to reconstruct the locally expected isotope ranges of different isotope systems (e.g., $\delta^{13}\text{C}$ carbonate, $\delta^{34}\text{S}$ collagen, $^{87}\text{Sr}/^{86}\text{Sr}$) in archaeological animals/humans using, e.g., $\delta^{13}\text{C}$ cellulose, $\delta^{34}\text{S}$ total sulfur, and $^{87}\text{Sr}/^{86}\text{Sr}$ data obtained from greenhouse plants. The locally expected sea spray effect can be generated by spraying the greenhouse plants with salty water from the Schlei inlet. In addition, the isotope values of environmental samples collected around Haithabu and close to the Baltic Sea allow to compare the isotope values expected based on the greenhouse experiments with those actually found in the investigated region. The reconstruction procedure is based on isotope fractionation processes between (plant) diet and consumer as well as mixing models.

The resulting isotopic signature of the greenhouse samples as well as of the environmental samples collected next to the Schlei allow to predict the isotopic signature of individuals living around Haithabu which fits and, thus, explains the isotope ranges of archaeological individuals excavated in Haithabu. Furthermore, the data allows the reconstruction of potential catchment area of the settlement. Finally, it is also possible to identify non-local individuals originating from somewhere else.

3 SCANDINAVIANS VS. BALTS? A NEW PERSPECTIVE ON THE VIKING AGE CEMETERY OF WISKIAUTEN AT THE CURONIAN LAGOON

Abstract author(s): Jahn, Christoph (Centre for Baltic and Scandinavian Archaeology Schleswig)

Abstract format: Oral

The cemetery of Wiskiauten is a Viking Age burial ground on the southwestern shore of the Curonian Lagoon, occupied by a Scandinavian population from the 9th-11th centuries AD. Wiskiauten served as an important outpost of Scandinavian expansion from the Baltic to the Black Sea. The burial ground in former East Prussia was excavated by German archaeologists in 20 excavation campaigns between 1865 and 1939, but the results were never published comprehensively. Today, a reworking of the old excavation documentation allows for new insights into previously unknown archaeological finds and features of this necropolis. The extensive excavation documentation offers the possibility to better describe and understand the interaction of the Scandinavian groups with the native Prussians and Balts over a period of about 200 years (850-1050 AD) at this site. For a long time, the German pre-war interpretation of a purely Scandinavian necropolis dominated. However, clearer indications of a simultaneous use of the burial ground by the indigenous population groups are now emerging, resulting in a takeover of the burial site by the native Prussians during the 11th-13th centuries (so called "Aschenplatz"). This presentation discusses the interaction of Scandinavian and Baltic elements at the necropolis of Wiskiauten based on previously unknown finds and features.

4 COMPANIONS IN LIFE AND DEATH: DOGS OF EASTERN BALTIC IN THE VIKING AGE

Abstract author(s): Plankajs, Eduards (Institute of Latvian History, University of Latvia; National History Museum of Latvia, Department of Archaeology)

Abstract format: Oral

In this study author analyses the dog (*Canis familiaris*) co-burial tradition in Livonian culture during the Viking Age. This specific mortuary practice appears amongst the Livonians around the beginning of the 11th century and ceases by the end of the 12th or beginning of the 13th century AD. The archaeozoological material of Eastern Baltic, Ukraine, and Scandinavia was used as context material. The variety of burials confirms that the sex and age of the dogs did not play a significant role. The presence of the dog itself and its symbolic meaning was more important. In addition, the

function(s) that the dog performed during or after the human funeral could also be different from the one that dog performed during its lifetime (hunting, herding dogs, sledge dogs etc.). The deceased (or their relatives) are believed have owned the co-buried dogs due to very similar paleodiet (stable isotope analysis of N and C) of the humans and dogs from the same burials. However, the dogs found in ship burials of Viking and Pre-Viking Age, for example, Salme II Ship burial (Saaremaa island, Estonia) evidenced that dogs could also be taken as companions and prestigious gifts on overseas voyages. The systematic radiocarbon analysis have performed with aim to define the approximate time when Livonians have probably assimilated this mortuary praxis through interaction with Scandinavian brothers-in-arms and / or trade partners, or have influenced by neighbouring Finno-Ugric people (Finns, Osilians, and Estonians) closely tied with Livonians.

5 **“ARMED PEOPLE OF POLACK PRINCES”: BURIAL RITE AND GRAVE GOODS OF 11TH-12TH CENTURIES MALE BURIALS IN UPPER VILIIJA REGION**

Abstract author(s): Plavinski, Mikalai (University of Warsaw)

Abstract format: Oral

During the second half of the 1st millennium AD the region between the Western Dvina and the Neman was actively populated by the Slavs. As a result, by the end of the 1st millennium here a fairly stable borderland was formed between the Slavic Culture of the Smolensk-Polack Long Barrows (Krivichi people) and the Baltic culture of the East Lithuanian Barrows (Lithuanian people). In the last decades of the 10th – first decades of the 11th century, the western border of the settlement of the Krivichi gradually transformed into the western border of the Old Rusian realm, namely, the Principality of Polack. In archaeological materials, this process is recorded by a number of signs, such as the emergence of new hillforts and unfortified settlements that were local administrative centers. Another new phenomenon characteristic of this period is the gradual change in funeral practice and the spread of the rite of inhumation. The first bearers of the new funeral tradition, which is associated with the spread of Christianity on the territory of Old Rus', were precisely the inhabitants of local administrative centers.

At the present stage of research, the most fully studied are the necropolises of the Principality of Polack local administrative centers in the Upper Vilija Region. These cemeteries are characterized by the presence of a significant number of weapons of Old Rusian types in male burials. In some necropolises, almost “total armament” of adult buried men is recorded. The wide distribution of weapons in inhumations of the very end of the the turn of the 10th / 11th – the first half of the 12th century can be considered both as a reflection of the high social status of the inhabitants of local administrative centers, and as a kind of cultural marker characteristic of the new Christian funeral rite.

6 **AN ISOTOPIC INVESTIGATION OF HUMAN AND HORSE MOBILITY IN THE VIKING AGE FROM THE CURONIAN SPIT TO THE DNIPRO UPLANDS**

Abstract author(s): French, Katherine - Madgwick, Richard - Corser, Jessica (Cardiff University) - Shiroukhov, Roman - Meadows, John (Zentrum für Baltische und Skandinavische Archäologie) - Daugnora, Linas (Klaipėda University) - Karczewski, Maciej (University of Białystok) - Baranov, Vyacheslav (National Academy of Sciences of Ukraine)

Abstract format: Oral

Increased cultural exchanges represented by the greater deposition of Scandinavian material culture in the Eastern Baltic region is well attested during the Viking Age (c.850-1050 CE). Biomolecular research is now increasingly identifying the human travelers behind those interactions through isotopic studies and aDNA. This paper presents the results of isotopic analysis of human and horse movement of individuals dated to the Viking Age and buried in modern Lithuania, northeastern Poland, Kaliningrad region (Russia) and Porossya region of Ukraine. Our project sampled individuals deposited from the 2nd to the 13th century CE at 15 cemeteries in the region. Samples included cremated human petrous bone and tooth enamel from humans and sacrificial horse offerings. Results suggest that there was not only an increase in human mobility during the Viking Age, but that there was also an uptick in the importation of ritually deposited horses from Scandinavia and within the Eastern Baltic region. Combining strontium, oxygen, and sulphur isotope analysis, this is the most comprehensive isotopic study to date of mobility in the Eastern Baltic region. The addition of this landmark scientific dataset is providing valuable new insights into the scale and character of connectivity and the role of horses in these networks during the Viking Age.

7 **BURIALS OF SCANDINAVIANS IN SOUTHERN RUS'. IN SEARCH OF ETHNIC INDICATORS**

Abstract author(s): Bibikov, Dmytro (Institute of Archeology of the National Academy of Sciences of Ukraine)

Abstract format: Oral

The quantification and determination of the social role of Scandinavian contingents within individual sites and regions of Eastern Europe are now among the most obvious tasks facing archaeologists in the light of the discussion around

the so-called „Varangian question“. On the territory of Southern Rus' we can consider as undeniable the burials of the Scandinavians the complexes containing: a) remains of ships/boats (“Halychina grave” of Krylos; probably: “Black grave” of Chernihiv; Shestovytsia No. 9; Belogorodka (1976); b) chamber graves in combination with a seated position of the deceased (Kyiv Nos. 110, 125, 30/1999; Shestovytsia Nos. 42, 61/3, 78, 110) or with a stepped platform for the horse (Shestovytsia Nos. 36, 98); c) traces of ritual damage to weapons (Shestovytsia Nos. 58, 93); d) oval (tortoise-like) brooches (Kyiv Nos. 124, 125; Vyshhorod (1985); Shestovytsia Nos. 53, 59, 60, 69, 78, 92); e) separate groups of Scandinavian amulets: iron neckrings with Thor’s hammer pendants (Shestovytsia nos. 104, 138), „Gnezdovo type“ pendants (Peresazh no. 28; Shestovytsia no. 78 (2011), wand amulets (or so called „pins with loops“) (Shestovytsia No. 96), fire sticks-like pendants (Leplyava); f) sets for banquets (“Black grave” of Chernihiv; Shestovytsia Nos. 36, 110, 2/2006) and Hnefatafl board-game (Kyiv Nr. 108; “Black grave” of Chernihiv; Shestovytsia Nos. 24, 33, 98; Sednev (1888). Thus, at the present moment we can speak of 35 burials with authentic Scandinavian features, located at 9 cemeteries, mainly around Kyiv and Chernihiv. But such approach allows us to identify only a minimal, significantly underestimated number of Varangian burials.

8 THE 10TH CENTURY HARBOUR AREAS OF VYPOVZOV AND SHESTOVYTSIA. COMPARATIVE APPROACH

Abstract author(s): Skorokhod, Vyacheslav (Institute of Archaeology National Academy of Sciences of Ukraine)

Abstract format: Oral

The Viking Age in Chernihiv’s Podesenne region is defined by two trade and crafts settlements of the 9th-10th centuries - Vypovzov and Shestovytsia, archaeological complexes located on the Desna River, between Chernihiv and Kyiv. Both sites developed at the end of the ninth century in similar topographical conditions, on elongated capes, and have identical socio-topographical structure. At the extremities of the cape there were hillforts with wooden and earth fortifications, with open settlements behind the ramparts, and the harbour areas at the foot of the terraces. Vypovzov and Shestovytsia harbour areas were studied in late twentieth and twenty-first centuries, which allowed us to obtain results on their form and development. The harbour of Shestovitsa was studied during 1998-2005 and 2019. During the excavations, moorings for landing ships and a significant number of wood splinters were discovered. The presence of clinker-type boats here is evidenced by the iron clinch, large nails, etc. On the lap of the Shestovytsia, ground dwellings, pits, a bone-cutting workshop, and a tar-works were discovered. In 2015, a ditch for pulling out and storing boats was explored in one part of the Shestovytsia. The material culture of the harbour area testifies to the military and trade activities of the inhabitants connected to Scandinavia.

The harbour area of Vypovzov is located on both sides of the cape. During the research from 2012 to 2019, 3 periods of settlement were identified. At the end of the ninth century, berths for mooring ships appeared. Later, at the beginning of the tenth century, ditches for mooring, storage, and repair of boats began to appear. These ditches were equipped with a canopy and were seasonal in nature.

Similar constructions are well known in the Viking Age North-Europe, but on the contrary are unique for the Old Rus’ of the late 9th-10th centuries.

9 FIELD RESEARCH AT THE OSTRIV CEMETERY (UKRAINE) IN 2017-2022

Abstract author(s): Baranov, Viacheslav - Ivakin, Vsevolod (Institute of archaeology of NAS) - Roman, Shiroukhov - Schneeweiss, Jens (Centre for Baltic and Scandinavian Archaeology - ZBSA)

Abstract format: Oral

In October 2017, Ostriv medieval cemetery was discovered on the right bank of the Ros’ river. In total 107 burials were investigated on the area of 2,250 m² in 2017-2022.

The most of burials were placed within ground pits. Most of the identified burials were made in wooden constructions, which are traced by individual boards or nails.

All the burials in the Ostriv cemetery have been laid on their backs, with the majority with extended limbs and head oriented mostly to the southwest, and only a small number to the north, northeast, and southeast. Other limb positions are also single and do not create the series. The vector of the burials and of the river that flows next to the necropolis are the same.

Another characteristic feature of the funerary rite of the Ostriv cemetery was the presence of funerary food and buckets in the burial. The buckets were placed at the feet of the deceased, were found in both male and female burials and can be linked to the process of Christianisation, as well as graves without goods, which are about 20%, and 2 graves with small cross-pendants.

Other burials had numerous funerary goods. The men’s graves contain weapons - axes, heads of pilums or spear, a single-bladed sword, and a sword head, details of a man’s belt, bone containers, grinding stones, and flints. Wire-twisted and zoomorphic bracelets, massive spiral neck-rings, and beads of various types, including gold-glass and kauri shell

beads, were found in female burials. Numerous penannular brooches of various types appear in both male and female burials.

While some artefacts such as weapons, beads and slate spindle whorls may be local products, most of the Ostriv's types of ornaments are obviously of Eastern Baltic origin.

10 DO THE GRAVE GOODS SPEAK? THE INFORMATIONAL POTENTIAL OF INDIVIDUAL BURIALS OF OSTRIV MEDIEVAL CEMETERY (UKRAINE)

Abstract author(s): Diachenko, Dmytro (Institute of Archaeology of the National Academy of Science of Ukraine)

Abstract format: Oral

The preliminary results of the study of the Ostriv cemetery in Porossya proved that at least part of the graves belongs to the group of East Baltic migrants of the 11th century. Ostriv's community was not homogeneous in its ethno-cultural and social composition. This research evaluates the informational potential of individual burial complexes for the possible reconstruction of the structural elements (cultural, ethnic and social) of the population of Ostriv. Two female burials №70–71, investigated in spring 2020, are selected for this analysis. Burials belong to the deceased, connected by close family ties. The recorded funeral rite shows both the common features of the necropolis and individual ones, which may reflect the worldview of the deceased. A similar situation is revealed by the grave goods. Some of the discovered artefacts are already known in the graves of Ostriv, while others surprised researchers. These grave goods take us to different regions of medieval Europe - the Eastern Baltic coast, the upper Niemen basin, the Middle Dnieper area and the early Piast state. Some of these materials have a rather limited area of distribution and a narrow chronology of use. This research actualizes the discussion regarding the relationship between daily and the otherworldly functions of grave goods, which accompany the deceased to the world of the dead. In the author's opinion, with the involvement of interdisciplinary approaches, the grave goods can tell researchers a lot about their origin and the life path of their owner.

11 BALTIC CEMETERY OF 11TH -12TH C. ON THE ROS' RIVER. PALAEOPATHOLOGY OF MIGRATION

Abstract author(s): Kozak, Alexandra (Institute of Archaeology, National Academy of Science of Ukraine)

Abstract format: Oral

More than 100 burials from the Ostriv cemetery, dating mainly to the 11th century, were excavated on the bank of the Ros' River by an expedition of the Institute of Archeology of the National Academy of Sciences of Ukraine. Archaeological and thanatological studies have led to the hypothesis that the territory of Porosia, along the southern borders of Kievan Rus, was settled by people from Northern and North-Eastern Europe, namely the Western and Eastern Baltic States and Scandinavia. Preliminary data from morphological and genetic analyses, as well as stable isotope studies, confirmed the migration hypothesis of the origin of the population buried at this site. It is assumed that the predominance of young and adult males and a small number of children, especially children over 6 years old, are demographic signs of recent migration in the studied population.

Some of the men probably belonged to a military garrison, as evidenced by weapons in the graves and the warriors' osteological complexes on their skeletons. Pathological features of teeth and bones, such as tooth enamel hypoplasia, caries frequency and intensity, calculus characteristics, frequency and location of skeletal injuries, and traces of metabolic and infectious diseases can serve as migration markers. Our results indicated that the individuals studied might have been representatives of different waves of migration. During one of these migration waves, an infection could have been introduced to the territory of Porosia, leading to the death of a part of the population.

12 MATERIAL ANALYSIS OF MEDIEVAL ARTEFACTS FROM EAST BALTIC REGION AND OSTRIV (UKRAINE) USING TRANSMISSION ELECTRON MICROSCOPY AND SCANNING ELECTRON MICROSCOPY

Abstract author(s): Saleem, Khurram (Department of Materials Science and Engineering, CAU) - Shiroukhov, Roman (Centre for Baltic and Scandinavian Archaeology - ZBSA) - Schürmann, Ulrich (Department of Materials Science and Engineering, CAU) - Baranov, Vyacheslav - Ivakin, Vsevolod (Institute of Archaeology of the National Academy of Science of Ukraine - IA NASU) - Schneeweiß, Jens (Centre for Baltic and Scandinavian Archaeology - ZBSA) - Kienle, Lorenz (Department of Materials Science and Engineering, CAU)

Abstract format: Oral

Since 2017, medieval artefacts were excavated at Ostriv cemetery on Ros' river located 80 km South of Kiev (Ukraine). The objects recovered from the cemetery were markedly different from chronologically synchronous antiquities of Kievan Rus' and showed stylistic commonalities with the artefacts from East Baltic regions. The artefacts are hypothesized to have been imported along with the East Baltic migrants from such historical tribes as Prussians, Curonians

and Scalvians. Here, we present a detailed interdisciplinary approach to study these 11-12th century archaeological objects consisting of flat ladder brooches, ring brooches, penannular brooches and neckrings. The analysis is focused towards finding common or separate origins of the artefacts by using a combination of stylistic approach and materials science. For material science approach, material analysis using Transmission Electron Microscopy (TEM) was conducted on the specimens to attain chemical and structural information at nanoscale. Moreover, Scanning Electron Microscopy (SEM) analysis was also performed to identify intrinsic and extrinsic (corrosion by-products etc.) components of the artefacts. The results showed usage of pure copper, brass and bronze in East Baltic artefacts and brass in the Ostriv cemetery artefacts. The theories about the manufacturing process of the artefacts and the craftsmanship are devised in the scope of this work and a strong evidence of common chemical origin of the artefacts is demonstrated. Additionally, the analysis and the used sample preparation by Focused Ion Beam (FIB) Milling is a step in the field of Transmission Electron Microscopy on developing analytical methodology which opens new viewpoints on archaeological artefacts.

13 OSTRIV CEMETERY (POROSSYA, UKRAINE) LABORATORY RESEARCH IN 2018-2023. RESULTS, CHALLENGES AND PERSPECTIVES

Abstract author(s): Shiroukhov, Roman - Schneeweiß, Jens (ZBSA Schleswig) - Baranov, Vyacheslav - Ivakin, Vsevolod (Institute of Archaeology of the National Academy of Science of Ukraine) - Meadows, John (ZBSA Schleswig) - French, Katherine (Cardiff University, School of History, Archaeology and Religion) - Kienle, Lorenz - Saleem, Khurram (Institute for Materials Science, CAU) - Krause-Kyora, Ben (Institute of Clinical Molecular Biology, CAU)

Abstract format: Oral

The main objective of Ostriv's laboratory research was to verify whether its population were migrants or locals. The pilot study confirmed the outward origin of Ostriv's population. Radiocarbon dating of nine graves placed them into the 11th century, synchronizing Ostriv and East Baltic sites with the same artefacts. The carbon and nitrogen isotope signatures of the Ostriv population are comparable to individuals in the Baltic region, along the d_{34S}/d_{32S} signatures are distinctive. aDNA research suggests close genetic proximity between the Ostriv population and Scandinavians, Balts and Fino-Ugrians. Metal analysis shows similar chemical composition of equivalent artefacts from Ostriv and the Baltic region.

The major limitation of the Ostriv pilot project was relatively small number of samples. The conclusions of the laboratory research were based on ten samples in each laboratory area, compared with larger datasets for the Baltic region. However, in the bigger new Ostriv-DFG project, the analytical scope is 3-5 times larger, which will allow robust testing of our hypotheses. Already now, based on new ^{14}C dates and finds data, we can confirm that the chronology of the cemetery reaches the second half of the 12th century. By comparing the data from the stable isotope studies of 2019 and 2022, we can also conclude that, despite its homogeneity, the Ostriv population drew from a variety of places, including the local Porossya people. New strontium isotope studies complement the isotopic picture.

New challenges for Ostriv's laboratory research include unification of sampling – taking all possible samples from the same specimen (tooth or bone); intraskeletal sampling to gather data from different periods of skeletal formation; intensification of strontium isotope research. By the end of the project's first phase in 2025, the comprehensive multiproxy dataset produced by the DFG team will provide powerful insights into the complex, multi-ethnic population buried at Ostriv.

361 WEAVING BIG DATA FOR THE DIGITAL MIDDLE AGES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Vargha, Maria (Charles University Prague) - Eichert, Stefan (Naturhistorisches Museum Wien) - Richards, Nina (Austrian Academy of Sciences) - Parvanov, Petar (Independent researcher)

Session format: Regular session

The proposed session follows a very stimulating meeting at EAA 2022 Budapest on a similar theme. Once again, we aim to bring together researchers from Europe who create digital collections and apply new quantitative modelling based on diverse evidence types, primarily archaeological and bioarchaeological data from archival reports and collections.

The session is interested in case studies enhancing the narrative value of the traditional foundation of our discipline like artifacts, ecofacts, and built features. The digital tools allow fascinating and thought-provoking reconstruction of their original context and the often invisible networks connecting disparate source types. Further, the digital approach intertwines with multiple themes highlighted on this year's event through its sustainability, accessibility, and expanding relevance in the contemporary world.

Adding to that, current research practices, especially prone to recording and analysing big data, will increasingly support and structure the conceptual framework within which archaeology operates. This requires proactive engagement

and matching widespread discussion on the ethical, methodological or even cognitive challenges found in the use of large-scale databases. The position of medieval archaeology in the intersection of available sources and competing narratives about the past can facilitate such a discussion rather successfully. Therefore, the session aims to give a platform to consider the potential and the challenges posed by 'Big Data' in medieval archaeology, review best practices and possible pitfalls, and stimulate a comparative overview by exploring different projects and research directions.

The session welcomes papers focusing on the Middle Ages, within the range of the following topics:

- Digital collection of archaeological sites
- Digital collection and analysis with burial archaeology
- Digital analysis of large-scale archaeological data
- Digital analysis of Medieval processes by archaeological data
- Digital collections and analysis of Medieval material culture.

ABSTRACTS

1 BEYOND THE ITEM (BITEM) - NEW WAYS TO PRESENT OBJECT BIOGRAPHIES AGAINST THE BACKGROUND OF DIGITAL HUMANITIES

Abstract author(s): Eichert, Stefan (Natural History Museum Vienna)

Abstract format: Oral

The bITEM project, funded by the go!digital 3.0 call of the Austrian Academy of Sciences (ÖAW), revolves around museum objects of great significance to cultural heritage and their biographies, which are to be digitized, investigated, and disseminated from a holistic perspective.

Included in the project are, amongst others, various archaeological entities, e.g. the "Venus of Willendorf" as well as the Longobard cemetery of Hauskirchen.

The Longobard cemetery of Hauskirchen - aside from elaborate grave furnishings - is an outstanding case of contemporary grave looting. Of particular importance is tomb 13, in which a woman was buried together with two horses with golden harnesses, which probably pulled a cart during her lifetime. The grave was robbed already a few years after the burial, nevertheless it is considered today as the most important Longobard grave in Austria with a rich research history from its discovery until today.

The submitted paper aims at discussing ways on how to map these objects' biographies in networks defined by classes and properties of the CIDOC CRM including also all relevant events, actors, changes and modifications that form the itinerary of the object from its creation until the present day.

Also the digitisation of the physical attributes utilising 3D Scans, MicroCT Scans and various scientific/material analyses in order to document the physical properties as holistic as possible will be presented.

Aside from the conceptual data mapping and data model also approaches on how to explore and visualise these biographies via open source web technology are an important part of the project and will be discussed.

2 AN INTERDISCIPLINARY APPROACH - ARCHAEOLOGICAL AND ANTHROPOLOGICAL INFORMATION IN OPENATLAS AND THANADOS

Abstract author(s): Richards, Nina (Austrian Centre for Digital Humanities and Cultural Heritage; Natural History Museum Vienna) - Eichert, Stefan (Natural History Museum Vienna)

Abstract format: Oral

OpenAtlas (<https://openatlas.eu/>), developed mainly at the Austrian Center of Digital Humanities and Cultural Heritage of the Austrian Academy of Sciences, is an open-source database software suited to acquire, edit, and manage research data from various fields of humanities. It provides a user interface, which is accessible via any common browser. It allows for easy data entry, while the data is mapped in the background according to CIDOC CRM version 7.1.1 (<https://cidoc-crm.org/>). The flexibility of OpenAtlas makes it particularly well-suited for incorporating previously published archaeological and anthropological data.

However, OpenAtlas is not meant to present this data to researchers and the interested public.

THANADOS - The Anthropological and Archaeological Database of Sepultures (<https://thanados.net/>) - uses OpenAtlas as backend and fills in this gap. The web interface provides and visualizes published information on anthropological and archaeological research on early medieval burial grounds as open data as well as related scientific analyses (e.g. 14C dating, stable isotopes).

The joint presentation of bioanthropological and archaeological data on one platform is of particular interest. Only in this way can connections be grasped beyond the boundaries of the individual scientific disciplines. This allows more

far-reaching conclusions about the life of past communities than would be possible for the individual disciplines on their own.

The proposed paper wants to discuss the implementation of various anthropological analyses in OpenAtlas and THANADOS and thus provides insight into how interdisciplinary data can be handled.

3 GO DIGITAL OR GO HOME: ASSEMBLING BIG DATA FOR COMPARATIVE RESEARCH ON DEVIANT BURIALS

Abstract author(s): Parvanov, Petar (National Archaeological Institute)

Abstract format: Oral

One of the more prominent themes in funerary archaeology over the last decade has been the rethinking of our approach to deviant burials. Very often the standout nature and the rarity of these finds compels researchers to take an in-depth approach to decipher their meaning or even original arrangement. Yet, larger comparative studies demonstrate some recurring patterns in the mortuary deviancy from medieval Europe and point out to multiple related phenomena. The varying levels of interpretation can complement each other and substantiate even more exciting discussion on medieval societies. This presentation, however, is not about this.

The focus will be placed on how the possibilities offered by the digital age can facilitate the expansion of the field based on a recent experience of adding data about the deviant burial practices from medieval Southeastern Europe on the Thanados open source database. Integrating the available information comes with its own set of issues related to legacy data, democratization of knowledge, standardization and so further, all provoking a reflection on its impact on archaeological work as a whole. Moreover, this is a call for cooperation in the study of deviant burials on continental level.

4 EMPOWERING THE VOICELESS - REFLECTING ON WEAVING BIG DATA

Abstract author(s): Vargha, Maria - Fajta, Martin - Václavíková, Dominika (Charles University Prague)

Abstract format: Oral

The present paper introduces the methodological foundations and most important results of a research project funded by the PRIMUS grant scheme titled 'Empowering the Voiceless. The Role of the Rural Population in State Building and Christianisation in East-Central Europe' conducted at Charles University, Prague. The project focuses on the process of Christianisation of East-Central Europe from the point of view of primarily the archaeological heritage of the rural population.

The project explores territoriality and aims to reconstruct the earliest network of rural churches based on historical and archaeological evidence to investigate the development of institutionalised Christianisation in the lowest level of society, and contextualise its network into the contemporary political, economic, religious and physical landscape, creating a comparative analysis with field cemeteries and secular power centres. The paper presents our review at the last year of the project, reflecting on the upsides and pitfalls of weaving large-scale religious and social geospatial databases.

5 URBAN LANDSCAPES - RECONSTRUCTING PAST PROCESSES OF LANDSCAPE TRANSFORMATION THROUGH 3D MODELLING

Abstract author(s): Haase, Kirstine (Aarhus University; Museum Odense)

Abstract format: Oral

Below the modern terrain of cities throughout Europe lies several meters of archaeological stratigraphy built up through centuries. These deposits are irreplaceable archives for studying past lives. Still, there are many things we need to learn and understand about these deposits. Regarding their formation, we often hear that the medieval cities' inhabitants threw waste in the street, the backyards etc., causing the build-up and the terrain to transform. However, this explanation has always seemed too simple and unsatisfactory. Why would people choose to live among their waste? There must have been more – and possibly more complicated processes – at stake. One way of studying the formation processes behind the urban deposits is to reconstruct the landscape and its transformation through 3D modelling. Through a 3D model, the interplay between the natural terrain, the manmade landscape and other structural elements in the city can be visualised, and new insights and understandings of the urban landscape transformation can be gained.

This paper presents a case from a medieval city in Denmark, where voxel-based 3D software is used to process data from the past 150 years of archaeological excavations supplemented by geotechnical borings. Thus, the paper wishes to address the topic of analysing medieval processes by archaeological data, as the organisers have highlighted in the

session abstract. Moreover, the paper will contribute to the session by suggesting best practice when reconstructing and analysing past urban landscapes through digital modelling of a multifaceted and complex dataset.

6 PLANT FOODS IN POST-MEDIEVAL IRELAND: A BIG-DATA, MULTI-DISCIPLINARY APPROACH

Abstract author(s): McClatchie, Meriel (University College Dublin) - Flavin, Susan (Trinity College Dublin) - O Carroll, Ellen (University College Dublin)

Abstract format: Oral

This paper will explore the nature and meaning of foodways in post-medieval Ireland, based upon a major new quantitative analysis of archaeobotanical remains from more than 50 excavations across the island. The sixteenth and seventeenth centuries were a period of increasingly globalised trade when new foods arrived in Ireland, some of which, such as the potato, became dietary staples. Irish food cultures were also influenced by neighbouring Britain, which ruled over Ireland at the time, as well as Europe, but some food choices seem to reflect more local traditions. Hundreds of archaeological excavations have unearthed food-related materials dating to the 16th and 17th centuries, including archaeobotanical and zooarchaeological remains, and artefacts, such as cooking and eating utensils. The paper will focus on the newly collated archaeobotanical dataset from the FoodCult project (www.foodcult.eu), exploring key trends in plant use in the context of wider evidence, including food-related objects, faunal remains, new organic residue and multi-isotope analyses, and new analysis of historical records.

7 DATA, METADATA AND MODELLING FOR QUANTITATIVE AND QUALITATIVE ANALYSES OF MEDIEVAL AND MODERN POTTERY IN CATALONIA. THE GREYWARE INFORMATION SYSTEM

Abstract author(s): Travé Allepuz, Esther (Universitat de Barcelona)

Abstract format: Oral

The GREYWARE project has recently developed a data-modelling structure for pottery analysis including information about medieval and modern pottery, potteries and known potters, traditional practices and raw materials in several intertwined repositories. The aim of this methodological development was to exploit quantitative and qualitative data coming from different sources of information and research approaches within an interoperable framework. Previous experiences of pottery repositories (1) led us to the adoption of the ontological concepts ‚Unit of Topography‘ and ‚Actor‘ as a method to articulate an information system to manage heterogeneous datasets (2).

Going beyond a pottery catalogue including description and graphic documentation, databases included within the GREYWARE information system contain analytical data of medieval and postmedieval pottery as part of the archaeological materials repository. Results of primary data exploitation such as paste groups, typologies, provenance and raw material procurement are introduced as well as second-generation qualitative data, together with non-archaeological information obtained primarily from written sources.

The principles behind this system are built upon the Past Construction Theory (3), considering that any kind of data regardless their nature or support must be integrated in the archaeological analyses of materials for them to be part of a past-constructing science. Our contribution aims at discussing the potential enhancements of the system, further development, and tools for data exploitation.

(1) Travé E, Vicens J (2020): Data Modelling for Digital Pottery Repositories: Research Experience of FAIR Data Integration at the Pottery Museum of Quart (Girona, Spain). EAA-2020. European Association of Archaeologists Annual Meeting. Poster Presentation.

(2) Travé E, Medina S, Del Fresno P, Vicens J, Mauri, A (2021): "Towards an Ontology-Driven Information System for Archaeological Pottery Studies: The GREYWARE Experience". Applied Sciences, 11: 7989.

(3) Thibodeau K (2019): The Construction of the Past: Towards a Theory for Knowing the Past, Information, 10: 332.

362 MULTI-PROXY APPROACHES TO PREHISTORIC LANDSCAPES OF THE CENTRAL MEDITERRANEAN

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Gustafson, Julia (University of Cambridge) - Carletti, Elena (University of Rome La Sapienza) - Schmidt, Frijda (University of Cambridge) - Puddu, Dario (University of Sassari)

Session format: Regular session

This session seeks to bring together multidisciplinary perspectives and methods to prehistoric landscapes of the Central Mediterranean, which we define as Italy, Greece, Southern France, Malta, Monaco, and the Balkans. Landscapes cannot be studied from a single viewpoint as there are multiple factors that contribute to the idea of landscape itself. Not only this, but landscapes can be read and interpreted in many ways such as physical, cultural, and social. Ancient

people adapted to their landscape, but they also actively shaped it according to their needs and beliefs. As the interaction between human and landscape is inherently multifaceted, it is necessary to take a holistic approach which allows for the widest range of methodologies and partly relies on multidisciplinary data. Therefore, we encourage contributions from a diverse range of scholars specialising in disciplines such as environmental studies, GIS, mobility studies, social sciences, archaeological sciences, anthropological approaches, theoretical approaches, Geoarchaeology, etc. By examining prehistoric landscapes in this way, we hope to broaden our understanding of the people who lived in and interacted with them.

ABSTRACTS

1 **LANDSCAPE USE IN A RAW MATERIAL PROCUREMENT COMPLEX OF THE CENTRAL BALKANS: HUMAN OCCUPATIONS AND GEOMORPHOLOGICAL PROCESSES AT LOJANIK (SERBIA)**

Abstract author(s): Lesage, Camille - Galfi, Jovan - Barbieri, Alvisè (ICArEHB) - Bogosavljević Petrović, Vera (National Museum in Belgrade)

Abstract format: Oral

The capacity of humans to harvest and modify natural resources has been a crucial skill for their survival since early Prehistory. Raw material procurement sites show evidence of the relationship between humans and their landscape through the ages, and are particularly important to understand prehistoric humans' behaviours. Despite the advantageous position of the Balkans as a corridor of human migrations between western Europe and the Near-East, their archaeological record is not as rich in such Palaeolithic sites as one could expect. In this context, the complex of Lojanik in the Central Balkans is crucial for the comprehension of lithic raw material procurement and landscape use in the region, as it is one of the largest Prehistoric quarrying areas known in Europe, showing numerous lithic raw material outcrops over an area of twelve hectares. Previous studies have shown that these outcrops were exploited during later Prehistory (Neolithic and Chalcolithic), but recently the discovery of Levallois elements indicates that the site was exploited as early as the Middle Palaeolithic. This emphasizes the specificity of Lojanik, since the Levallois reduction sequence is a rare occurrence in the Central Balkans, where most Middle Palaeolithic assemblages are characterized by a more expedient lithic industry. Our project aims to better understand the status of this Levallois components and the earliest occupations of the site, as well as the patterns of the different human occupations through time. Combining airborne LiDAR mapping, geomorphological and archaeological survey, and techno-typological analysis of lithic artifacts, we reconstructed the geomorphological evolution of the landscape and its use by prehistoric societies.

2 **SEARCHING FOR THE SOURCE: RECONSTRUCTING TERRITORIAL MOBILITY IN THE SABINA REGION (CENTRAL ITALY) THROUGH LITHIC RAW MATERIAL SOURCES**

Abstract author(s): Carletti, Elena (Sapienza University of Rome) - Eramo, Giacomo (University of Bari) - Forti, Luca (University of Milan) - Mancini, Alessandro - Conati Barbaro, Cecilia (Sapienza University of Rome)

Abstract format: Oral

Lithics represent one of the most ubiquitous finds throughout Prehistory, hence one of the best tools to investigate human behavior.

Beyond the traditionally adopted technological perspective, multi-scalar approaches can enhance the comprehension of prehistoric societies, with particular emphasis on human-environment interactions. Raw material provenance analyses represent a promising tool to deepen the topic, allowing to detect lithic sources and, consequently, mobility patterns to access natural resources. Human groups were, indeed, deeply aware of the ecosystem they lived in and exploited it according to their needs, adapting to and shaping their landscape.

To answer the question of lithic role in revealing mobility and human routes to natural resources, we applied provenance analysis to the assemblage of Grotta Battifratta (Sabina region, northern Latium, central Italy), a cave site showing a long-term occupation from the upper Pleistocene on. We focused on the Neolithic assemblage. The raw materials examined suggest the exploitation of different sources, whose variability has been analyzed using different methods, with the aim of determining their provenance. The identification of lithic deposits will help defining site-catchment areas and territorial behavior, linking the site to a larger territory in order to 1) trace spatial mobility and 2) reconstruct the ancient landscape.

3 **VISUALIZING UNSEEN LANDSCAPES: REPORT OF THE KHAVANIA ARCHAEOLOGICAL PROJECT, 2022**

Abstract author(s): Fitzsimons, Rodney (Trent University) - Buell, D. - Francis, Jane (Concordia University) - Smith, Robert (Brock University)

Abstract format: Oral

This paper presents the preliminary results of the 2022 season of the Khavania Archaeological Project, the primary objective of which is to document all natural and anthropogenic features at the coastal site of Khavania, East Crete, located on the western shores of the Bay of Mirabello. Interestingly, while exploration of the eastern and southern shores of the bay has produced abundant evidence for cultural development in the region, its western side remains virtually unexplored, particularly for the Bronze Age. Rescue excavations in the vicinity of Aghios Nikolaos have produced a solid understanding of the historical landscape, but the earlier prehistoric remains in the region have continued to elude detection for the most part. It is in this context that the current project was established in 2019, with the overall goal being to study the development of what appears to be a significant Minoan harbour town, especially in terms of its local, East Cretan, and broader, island-wide, socio-political, economic, and ideological relationships. The focus of the 2022 campaign was the study of all portable objects collected during site surveys in 2019 and 2021 in order to: 1) create a refined site history; 2) establish a ceramic profile for the site during various phases of occupation, one which is based on general morphology and fabric composition; 3) provide a ceramic template for future studies in this part of Crete, especially; 4) understand the use of local resources; 5) examine possible activities conducted at the site over time; and 6) develop an understanding of both inter- and extra-island contact and exchange. The focus of this presentation will be the results of this ceramic study.

4 **A MONUMENTAL LANDSCAPE OF MEMORY IN SARDINIA: THE NURAGHI OF THE GIARA DI SIDDI AND ITS SURROUNDS**

Abstract author(s): Gustafson, Julia (University of Cambridge)

Abstract format: Oral

Monuments and more importantly, monumental landscapes, are designed to impress— they have a lasting impact on both their surrounds and the people who encounter and interact with them. As monuments are used/re-used, built/re-built, and encultured/ re-encultured through time, they demonstrate how people attached meaning to difference places and how this meaning shifted and changed as society transformed. They become ‘landscapes of memory’; palimpsests of human-monument interaction. The Sardinian Bronze Age saw the emergence of the Nuragic culture, which is characterised by the construction of impressive megalithic architecture, in the form of the eponymous Nuraghi. Today, Nuraghi are an important symbol of Sardinian national identity, and their continued re-use throughout the classical, medieval and modern periods stands as a record of their important place in the imagination and memory of Sardinians. Using the Giara di Siddi, a small plateau in south-central Sardinia, and its surrounds as a case study, this paper explores human-monument interaction through the *longue durée* and examines how Nuraghe act as mnemonic devices to reinforce social identity and define communities.

5 **OUTSIDE THE VILLAGE: LANDSCAPE MODEL BUILDING FOR SARDINIAN PREHISTORY**

Abstract author(s): Puddu, Dario Antonio (University of Sassari)

Abstract format: Oral

This paper presents the methodology applied to the study of the area between the current centers of Usini, Ossi and Tissi, in northwestern Sardinia, which constitutes a separate sector due to its natural characteristics. From a chronological point of view, the evidence attributable to the Final Neolithic and Eneolithic are taken into consideration. The absence of stratigraphic investigations in this area makes it difficult to trace a more precise chronology and in the same way it is not possible to rely on traditional data from excavations to reconstruct the relationship of the individual communities with the surrounding areas. However, the ground surveys have often highlighted a continuous frequentation in multi-layered deposits in the known sites, testifying to precise and repeated choices in the location of the settlements. Through the settlement strategies modelling, it was possible to experiment with an approach that has as its starting point the reconstruction of the landscape, intended as the primary scenario of human action, even before the single site. The proxy data considered consist of geographical data obtained from the analytical observation of the landscape and made quantifiable thanks to the tools provided by the gis. These can represent both the environmental characteristics of the territory and the interaction dynamics of human groups with each other and with the surrounding landscape. Specifically, the potential of topographic position, soil nature, presence of resources, accessibility of occupied areas, visibility and so on are investigated. At the end of the analysis, it will be possible to define the impact of these assets on the existing settlement strategy and to understand the human perception of the landscape in a utilitarian and functional perspective for its population.

6 MODLAND: NEW INSIGHTS ON CHANGES OF HUMAN-ENVIRONMENT INTERACTIONS IN SOUTH-EAST ITALY DURING THE LATE 3RD AND THE 2ND MILLENNIA BC

Abstract author(s): Lucci, Enrico (University of Bari - DIRIUM)

Abstract format: Oral

The cultural landscape of Southeast Italy results from long-term interactions between human societies and the diverse ecological niches characterising the region. Starting from 4000 years ago, it has been progressively shaped by the increasing impact of human activities. The combining of archaeological, palaeoeconomic and ecological analyses represents the most effective way to understand these human-environment interactions, providing meaningful insights into historical questions and to future sustainability of societies, ecosystems and physical landscape. However, this interdisciplinary approach has never been adopted for Southeast Italy where current understanding of human-environment interaction relies on pollen studies. We lack knowledge regarding the anthropogenic landscape formation processes from a spatial perspective, capable of defining which were the places the prehistoric communities were tied to, what type of economic activities they performed there, and how much such practices physically impacted on those places.

The project ModLand (funded by the Next-Generation-EU) aims at filling this gap, deepening the understanding of human-landscape interaction in Southeast Italy during the 3rd (LCA, Late Copper Age) and 2nd mill. BC (BA, Bronze Age), especially by revealing its diversity over space and time by implementing the MaxEnt modelling technique.

This presentation will outline the project's methodology and first data analysis, with a special focus on two, highly environmentally diversified, sample areas of South-East Italy. The first one encompasses a particular inland/upland territory of the Apennine mountains, which saw the presence of one of the largest waterbodies of the Italian peninsula until the mid-19th century AD (the Fucino Lake); while the second focuses on Northern Apulia, which is characterised by a convergence of diverse ecological niches, ranging from the dynamic ecosystems of the coastal and wet areas to the uplands and rough mountain valleys of the Gargano promontory.

7 DOLMENS IN THE BALEARIC ISLANDS DURING THE EARLY BRONZE AGE (2100-1600 BCE): FIRST RESULTS OF THE RESEARCH

Abstract author(s): Orosa-Queijo, Ángela (Incipit - Institute of Heritage Sciences)

Abstract format: Oral

The megalithic phenomenon is identified in the Balearic Islands during the III millennium BCE. Among the variety of structures, dolmens are the most ancient and the most representative of this period. This is largely due to their presence in the main islands, Menorca, Mallorca and Formentera, with the exception of Eivissa, and to their wide funerary use until around 1600 BCE. Moreover, the construction of the dolmens is one of the first evidences of the anthropogenic modification of the landscape in the archipelago.

However, despite the significance of these monuments as a materialization of the social concept of space by prehistoric communities, their presence and relationship with the surroundings has not been addressed by scientific research. Additionally, the lack of literature and the insufficiency of radiocarbon dating hinders the understanding of the evolution and specific chronology of the phenomenon.

The aim of this research is to analyse the funerary landscape of the Balearic Islands to understand the social characterization of their earliest communities. Thus, we will approach the visual perception of the dolmens and the relationship between monuments through archaeological evidence. To further in their funerary aspect, we will study the human remains with a bioanthropological approach. Bone analysis will allow us to set a more adjusted chronology and to improve our knowledge of the prehistoric inhabitants' lives.

8 NEW ARCHAEOBOTANICAL INSIGHTS FROM TARQUINIA: PLANT EXPLOITATION OF AN ETRUSCAN URBAN CENTRE

Abstract author(s): Schmidt, Frijda (University of Cambridge) - Gaveriaux, Fanny (Department of Earth Sciences, Sapienza University of Rome) - Marzullo, Matilde - Bagnasco Gianni, Giovanna (Università degli Studi di Milano) - Soddart, Simon (University of Cambridge)

Abstract format: Oral

The first millennium BC marks a crucial period for central Italy and one of its main agents was the Etruscan cultural complex, which moved from nucleated settlements to urban centres, and ultimately early state-formations. These processes are regarded as highly interdependent with the reorganisation of subsistence practices, but so far little research has been conducted in understanding how agriculture developed in this framework.

This talk will present new results from an ongoing archaeobotanical examination of the so-called Complesso Monumentale, the ritual centre of former Tarquinia, which has been excavated and sampled for macro-botanical remains in recent decades, and currently represents the largest archaeobotanical assemblage available from the Etruscan core-area. It will explore patterns of plant exploitation during the first half of the millennium, in order to track developments in agricultural strategies of major staple exploitation and environmental adaptation and management. The obtained results will be integrated with archaeological data on the form, function, and cultural role of Tarquinia (Bagnasco and Marzullo), isotopic analysis of cereals from the site (Gaveriaux), and the geopolitical entanglements with the wider territory (Stoddart).

A. MOBILITY STUDIES IN THE SABINA REGION (CENTRAL ITALY): NEW RESULTS FROM POTTERY AND CLAY DEPOSITS ANALYSES OF BATTIFRATTA CAVE (RI)

Abstract author(s): Chiarabba, Emma - Medeghini, Laura - Capriotti, Sara - Marconi, Nadia (Sapienza University of Rome) - Forti, Luca (University of Milan) - Mancini, Alessandro (Sapienza University of Rome) - Conati Barbaro, Cecilia

Abstract format: Poster

Mobility through raw material resources is a central topic of the archaeological panorama. In recent years, multidisciplinary approaches to material culture analysis have allowed us to gain a better understanding of past societies and their interactions with the environment. Multi-scalar approaches on pottery and clay enable to answer many research questions like the raw material provenance, technology of pottery production, exchange networks, and human mobility.

This study focuses on the provenance of the clay used in the Neolithic and Bronze Age pottery production at Battifrattra Cave in the Sabina region (central Italy). The mineralogical composition of the pottery was determined through petrographic analyses in thin sections and, then, compared to the results obtained from clay samples collected from the site's surroundings. Fourier transform infrared spectroscopy (FTIR) was also used to characterize clay samples and Neolithic and Bronze Age pottery. The goal of this work is to go further into this little-known area of central Italy and discuss its prehistoric peopling, exchange routes and mobility. The Sabina region is, indeed, strikingly important due to its role in connecting the middle Adriatic and the middle Tyrrhenian areas.

B. ANTHRACOLOGICAL AND FUEL ANALYSIS OF THE IRON AGE SETTLEMENTS AROUND THE OHRID LAKE (NORTH MACEDONIA)

Abstract author(s): Šmolková, Markéta (Institute of Classical Archaeology, Faculty of Arts, Charles University Prague) - Beneš, Jaromír (Institute of Archaeology, Faculty of Philosophy, University of South Bohemia; Laboratory of Archaeobotany and Palaeoecology, Faculty of Science, University of South Bohemia) - Atanasoska, Nevenka (Institute of Archaeology, Faculty of Philosophy, University of South Bohemia) - Ardjanliev, Pero (Archaeological Museum of Macedonia, Skopje)

Abstract format: Poster

The region around lake Ohrid in the southwestern Balkan represents an environmentally heterogeneous region, where the habitation shifts in the landscape during various periods are clearly observable. The lake area is intensively studied by a Czech-Macedonian research expedition since 2019 focusing on the socio-cultural development at the end of the 2nd millennium BC and the reconstruction of economic and subsistence strategies before the shoreline area of the lake was flooded due to the massive earthquake around 1200 BC. A further part of the research focuses on changes in subsistence strategies in the early and developed Iron Age (1000-550 BC), which are primarily connected to settlement shifts to higher elevations. As part of the research, two hilltop sites have been excavated up to now, Leskovec and Dolno Lakocherej.

Preliminary results of anthracological analysis of charcoal samples from research season 2022 on Dolno Lakocherej are presented here. Together with palynology, osteology, and macroremains analysis, anthracology represents a part of the multi-proxy approach study of the Iron Age landscape reconstruction.

The final outcome should demonstrate presumptive evidence of intensive grazing involvement and describe the forms of fuel management as a part of the economic and subsistence strategies. Together with Leskovec, Dolno Lakocherej represents a settlement form characteristic of the region at the beginning of the 1st millennium BC and reflects the changes in using landscape in comparison with the previous Neolithic and Bronze Age palaffite settlements.

In a broader context, research on the early Iron Age settlement's socioeconomics should allow us to reconstruct the overall society development which resulted in the so-called princely graves horizon at the end of the developed Iron Age, witnessed by the nearby burial site at Trebenishte.

ART AND ARCHAEOLOGY - TOWARDS A FRAMEWORK FOR THE CREATION OF SUSTAINABLE NARRATIVES

Session theme: 3. Heritage Narratives and Representations

Session organisers: Zinn, Katharina (University of Wales Trinity Saint David) - Høst-Madsen, Lene (Skanderborg Museum) - MacGregor, Gavin (Archaeology Scotland)

Session format: Regular session

Can art make archaeology more relevant in these times of change? How can we creatively contribute to local – global conversations and actions through archaeological heritage? How can we understand and communicate the fundamental importance of sustainability, perhaps going beyond the immediate focus of climate and biodiversity crises? How do we tackle changing ethical questions faced in heritage practice and archaeology when attempting to decolonise heritage or to increase diversity in the sector? How can we create communities, weave narratives and tell stories so that we reach out to (new) audiences, foster engagement and create (new/altered) identities?

Thinking in traditional disciplines and practices may not equip archaeologists, heritage and museum professionals or academics to ensure that their sectors stay relevant. New academic turns, such as the focus on the agency of objects, discussions around New Materialism and Post-Humanism, already encouraged innovative thinking. Perhaps, however, it is renewed focus on curiosity and (artistic) creativity which will allow us to develop theoretically grounded and equally successfully applied frameworks towards the development of best practice. This highlights the need to develop complex systems of care spanning archaeology, heritage, art, education and economies through both practice and research in order to stay relevant and have social impact.

The panel invites case studies, and creative responses, which explore how artistic approaches can, will and have deliver(ed) answers to the questions above and further our understanding of the emotive potential of creative/artistic narratives conceived from, or applied to, archaeological heritage. The inter- and trans-disciplinary expertise of the panel organisers will help to weave these examples and approaches together, in discussion with the session presenters, into a potential framework with the aim to publish.

ABSTRACTS

1 WHEN SCIENTIFIC PROFESSIONALISM OF ARCHAEOLOGY MEETS CONTEMPORARY ART

Abstract author(s): Host-Madsen, Lene (Museum Skanderborg) - Rasmussen, Steen (Independent artist) - Lyk-kegård-Maes, Mette (Museum Skanderborg)

Abstract format: Oral

Museum Skanderborg has created the project KUNSTLABORATORIUM – PERRON1 in collaboration with Art Council Skanderborg as part of the dissemination strategy that the museum is working on.

The project works with concepts for the interpretation of archeology through contemporary art; both in temporary exhibitions and in building-integrated art in the building as a whole. One of the initiatives is to involve contemporary art as an active and outgoing citizen-involving participant.

Various artists are invited to try out some of the museum's rooms before an upcoming redevelopment of the museum in order - through art - to explore possibilities and potentials linked to the development of the entire Museum Skanderborg - Perron1

This paper is based on the exhibition "Apocalyptic thoughts - What remains"

Visual artist Steen Rasmussen and museum director Lene Høst-Madsen talk about some of the realizations that artist and museum have achieved through the collaboration. The hope is to create a greater understanding and use of art in archaeological contexts. Based on Lene Høst Madsen's experiences with projects such as Escape and the Art Laboratory and Steen Rasmussen's many years of work in bringing contemporary art to the people through co-creation projects.

The conversation starts from a common recognition that when the scientific professionalism of archaeological museums is set against art's wondering look at the world, you get an expanded perspective on things and a greater understanding is opened up.

We find that the cooperation between art and archeology possesses great potential and would love to share our experiences in this session.

2 DECONSTRUCTING ARCHAEOLOGICAL LANDSCAPES OF THE PEAK DISTRICT

Abstract author(s): Bowyer-Kazadi, Emily (University of Liverpool)

Abstract format: Oral

This paper shall focus on deconstructed landscape photography which uses individual shots within a panel rather than a shot of the entire landscape with different examples being presented from the authors PhD research in the Peak District. This method can be done by anyone with an access to a camera and computer and can highlight many different types and variations of archaeological landscapes and sites in a wide range of contexts, meaning that no two panels will be the same. The panels will be used in several ways including being printed on roller banners so that they are easily transportable and can be used multiple times, therefore being sustainable, in moving exhibitions at various visitor and community centres as well as the author aiming to run guided walks and training on photography and using the software. This method has great scope and potential and must be adaptable to different areas and regions all over the world, linking heritage across borders and it can be sustainably developed whilst considering all the elements discussed above including considering the accessibility of different groups to archaeological landscapes and their needs in relation to identity; wellbeing; equality, diversity, and inclusivity as well as sustainability. This includes (but is not limited) to creating training manuals in different languages (including for those who are audio and visually impaired) and a set of guidelines for all practitioners to follow, training sessions, working with schools, local groups and universities, and finally partnering with local sites and businesses. Deconstructed Landscape Photography is an especially relevant method due to the nature of today's society which is highly linked to sharing images online and can therefore contribute to a potential framework that will enable all people, regardless of their race, gender, religion etc. to engage with archaeological landscapes wherever they are.

3 INNOVATIVE AND PROVOCATIVE APPROACHES TO THE ART AND ARCHAEOLOGY INTERPLAY PHENOMENON: OUTLINE OF A PLANNED PUBLICATION

Abstract author(s): Hadji, Athena (DIKEMES - College Year in Athens) - Jameson, John (ICOMOS ICIP/ICAHM, U.S. National Park Service)

Abstract format: Oral

Archaeological objects can be seen as both expressions of larger cultural traditions and as tied to individual people who have their own idiosyncratic desires, experiences, and understandings, and use art and material culture partly to know and express themselves, and partly to negotiate and confirm their positions in larger social and political fabrics. Materiality is understood as corporeality first and foremost, both of ourselves as inquiring subjects and of our objects of inquiry (Hadji 2015). In our attempts to capture the interplay between archaeology and the arts, we carry forward several relationship assumptions. We believe that the practice of archaeology, as well as archaeologically derived information and objects, can inspire a wide variety of artistic expressions ranging from straightforward computer-generated reconstructions and traditional artists' conceptions to other art forms such as 2- and 3-dimensional art, public sculpture, poetry, music, opera, theatrical performance, and storytelling. Moreover, a reciprocity emerges: art practices of the present can critically inform archaeological interpretation, in more aspects than the practice of art or 'art' in the past. These cognitive connections between archaeology and the arts reflect an inferential approach in defining, explaining, and introducing an object or resource and making it more meaningful to the public. The credibility and relevance of our proposed volume is enhanced by the observation that archaeology and heritage have a long shared history with art. Recent initiatives within and outside academia have probed into the historical interactive relationships between archaeology and the arts. In a planned volume tentatively entitled: "Archaeology and the Arts: Seeing the 'Art' in Artifacts," our goal is to provide insights with a provocative collection of essays that provide unique and innovative approaches to the art and archaeology interplay phenomenon -- the fascinating, dynamic, cognitive reciprocity between tangible and intangible --- in the context of today.

4 ARCHAEOLOGICAL SENSIBILITIES IN POLISH CONTEMPORARY ART: TRACING GENEALOGIES

Abstract author(s): Stobiecka, Monika (Faculty of Liberal Arts, University of Warsaw)

Abstract format: Oral

Recent years have shown a growing interest in art/archaeology exemplified by displays organized in archaeological museums and art galleries, as well as by a wide selection of artworks created by world-famous artists. This interest in archaeology is particularly present in contemporary Polish art. Hubert Czerepok in the video "Nemzeti Tájképek" (2016) presented a future vision of archaeology while visiting a renowned Turkish Neolithic site, Karahan Tepe, with a lunar rover. Diana Lelonek in "New Archaeology for Liban and Płaszów" (2014) presented objets trouvés from an abandoned mine and a former concentration camp in Cracow. She observed the natural processes that took over a variety of objects that she found. In an artistic project "Heavy water" (2017-18), Agnieszka Kalinowska copied African water vessels and decorated them with the "migrant sign" to show analogies between prehistoric migrations and the current migration crisis. Agnieszka Kurant, in the series "Future fossils" (2014-19), created uncanny artifacts from the

future, investigating what will be perceived as our heritage. Angelika Markul has been exploring the archaeological past in order to understand the current climate crisis. This short overview shows the growing popularity of archaeological motifs in contemporary Polish art.

Although traces of a particular archaeological sensibility in Polish contemporary art can be identified in the earlier artworks by Władysław Hasior, Tadeusz Kantor and Mikołaj Smoczyński, archaeology in Polish contemporary art is not used only to refer to important avant-garde artists. Therefore, the presentation will aim to discuss the various genealogies of archaeological sensibility in Polish contemporary art. It will answer questions about why do artists use archaeological motifs? What do they want to address in their art? How do the traditions of Polish art affect the archaeological sensibilities of today?

5 ART + ARCHAEOLOGY + COMMUNITY: A SUSTAINABLE STRATEGY

Abstract author(s): Gheorghiu, Dragos (National University of Arts in Bucharest)

Abstract format: Oral

In the contemporary world archaeology can also be socially engaged as a tool when mixed with art, the material culture of the past becoming a source of inspiration to create a new art and identity for some communities.

The paper presents the results of a 20-year project carried in a rural community in Romania, where the complete loss of the traditional identity during the totalitarian regime, required an approach to create the lost cultural diversity.

Experimental archaeology used as an art tool recovered local ancient technologies, which were used by invited visual artists and villagers as models, creating both contemporary art objects and a folk art in progress, together with an economic change. Land-art and performances, together with digital technologies, also helped archaeology to have a strong educational role.

A large part of the community was involved in the archaeological experiments, the art workshops, and the e-learning courses, contributing with information on the local heritage and producing original objects with ancient technologies. A local workshop of ceramics was created, producing a unique folk art.

This project functioning as a model of integration of archaeology and heritage with art and education initiated the construction of a new heritage and produced in time a social effect on the community. How the ideas of this project to combine art and archaeology were accepted and taken up by other communities of archaeologists, artists and local people in different European locations can be seen at www.timemaps.net.

6 ART/ARCHAEOLOGY: DISARTICULATION AND DISRUPTION

Abstract author(s): Bailey, Doug (San Francisco State University)

Abstract format: Oral

The connections between art and archaeology are rich and well-rooted, both in terms of interpretive and creative work. A recent set of projects, however, has explored the territories that exist beyond the boundaries of both art and archaeology. The goal of these projects and of art/archaeology in a wider sense has been to make creative work and provoke debate. These projects have disarticulated artefacts and other archaeologically recovered materials from their pasts, and then used those newly liberated objects as raw materials in the making of new creative work in order to engage challenges found in the modern world. This presentation will present the art/archaeological work from three of these projects: Ineligible (San Francisco and Santo Tirso); Releasing the Archive (Oslo, Santo Tirso, and Lisbon); and Releasing the Amphora (Syracuse and San Francisco). The aim is to generate discussion and debate about what roles archaeological materials can play in the resolution of contemporary social, economic, environmental, and political challenges.

7 HOW CAN AN EXPANSION OF AN ACADEMIC MUSEUM ENHANCE THE NARRATIVE OF THE PERMANENT COLLECTION OF ATHENS UNIVERSITY HISTORY MUSEUM

Abstract author(s): Papoulias, Evangelos - Zounis, Theoklis - Petros (National and Kapodistrian University of Athens)

Abstract format: Oral

Athens University History Museum (AUHM) was inaugurated in 1987 in the context of the 150th anniversary of the National and Kapodistrian University of Athens (NKUA) Institution since its establishment. AUHM aims at presenting the important history of the oldest university of the country, in the building where the Institution started operating in 1837. Its integration in the cultural center of Athens makes it special on a global level, because very few universities have managed to create a museum which highlights the cultural heritage of the university and one that addresses not only the academic community but also the broader public.

In 1998, with the decision of the Greek Ministry of Culture, NKUA was granted the right to utilize the property at 16 Tholou Street for an expansion of its history museum. The reconstruction and expansion of the building completed in 2019. What was the main aspect of a new narrative of the permanent collection for the new building? Specifically, NKUA's portrait collection includes 347 works of 90 different artists, remarkable examples of modern Greek art narrating the history of NKUA, as well as the important role of those great figures in higher education. All the collection was scattered in many buildings of the university. The NKUA administration decided to present to the new building the NKUA's growth in its historical space-time. The exhibition hall displays oil paintings of figures who composed the university's First Senate in 1837, and significantly marked the course of the university's life, all in one display unit, for the first time. The paper examines the new approaches and perspectives for museologists to create a new storytelling in order to promote and enhance academic heritage to public.

8 CASE STUDIES FOR A CREATIVE ANTHROPOLOGY: BEHAVIORAL ARTIFACTS AND PRIMATOSCOPY-01

Abstract author(s): Potvin, Yanik (Université du Québec à Montréal; Université du Québec à Chicoutimi; <https://hexagram.ca/fr/>)

Abstract format: Oral

The integration of creativity in North American anthropology opens up new and promising avenues of research that align with practice-based research in the arts. By using clay and ceramics as an epistemic object for artistic endeavors within the sub-disciplines of anthropology, I have encountered the intersections between my experiences in archaeology and my art practice. I propose to review two of my projects in creative anthropology: Behavioral Artifacts and Primatoscopy-01. The Behavioral Artifacts project proposes an expansion of the concept of artifact to encompass the traces, images, objects, sounds, or lists of instructions produced by the performativity of working with clay. The interaction of various states of clay and ceramic cultural traditions can shape the body and result in behaviors that challenge the identity of the artist and the legitimacy of material produced in humanities research. The primatoscopy-01 project exemplifies the constructivist approach through the behaviors produced by two species of primates (*Macaca fuscata* and *Theropithecus gelada*) in various phases of manipulation of traditional clay forms. The results of these two research projects will be related and future directions will be discussed. Theoretical articulations around material agency, subjectivity in anthropology, practice-based methodology, art historical contingencies and the practical application of posthumanism will guide the presentation. The Behavioral Artifacts project will be presented in Canada in the spring of 2023 through the publication of a monograph and a transdisciplinary conference (art, literature and archaeology). The Primatoscopy-01 project was presented at the École Nationale Supérieure des Arts Décoratifs de Paris (EnsAD) in the year 2022. As a result of the discussions and interventions, the activities planned for the Primatoscopy-02 project can be better oriented. The experiments will take place between 2023 and 2024 and will allow for enrichment phases in a great ape (*Pan troglodytes*) sanctuary.

9 DIFFICULT HERITAGE, ART, AND ARCHAEOLOGY

Abstract author(s): Bezic, Ana - Tomić, Milica (IZK / Institute for Contemporary Art, Graz University of Technology)

Abstract format: Oral

The archeological concern and engagement with the contemporary past has emerged as a significant field of archaeological endeavour in the past two decades. As representations and memory of the modern conflicts continue to be contested, archaeology has employed various methods and conducted significant work in the attempt to aid in post-conflict reconstruction and reconciliation. Significantly, the domain of art has recently emerged as a critical platform for disrupting the official erasure and silencing of experience and knowledge about the contested past. Can such proactive and complex art, cut across public, political and cultural domains to enabling and producing space where discussion about difficult heritage can take place?

One such space is the focus of our presentation. Four Faces of Omarska, Belgrade based art-collective, has been engaged for the past decade in exploring the strategies of memorial production and the (im)possibility of memorialization from the position of those whose experience and knowledge have been excluded from public memory and public history. This ongoing art project takes Omarska, a former concentration and war prisoner camp during the Yugoslav wars, as a case study and by using the relevant texts, media, photographs, video and audio material, oral accounts, and legal documents this project makes visible the complex set of political, cultural and economical interests that has and continues to shape this location.

The complex history of the site shows at one end a disjunct, marginalised and suppressed knowledge and on the other no political and economic power to build a memorial. How to build a collective of trust and common ground for memorialization? This project, through the material gathered, produced and exhibited has enabled a new kind of praxis, a more democratic and inclusive one with a potential to empower different participants and create new associations.

10 PERFORMATIVE READINGS: OVIL AS A TRANSHISTORICAL PLACE

Abstract author(s): de Carvalho, Helena Paula (Lab2PT - University of Minho) - da Silva, Pedro (CEAACP - University of Coimbra) - Moreira, Inês (Lab2PT - University of Minho) - da Conceição Lopes, Maria (CEAACP - University of Coimbra)

Abstract format: Oral

Mount Ovil site, in Portugal, is a testament to different phantasmagorical realities that cover a broad chronological landscape, from prehistory to contemporary times. This site is characterized by the presence of materialities shared between the ruins of both proto-historical settlement and modern paper factory. Reading these realities is fundamental to understand the relationship between nature and human activities over time, that is, we observe the performativity of the site and how it has evolved over time, including the recycling of materials and their transformations. Shale, for example, is a material that was used in the construction of a proto-historical village, then transported to a paper factory, and today it slowly returns to the river. This archaeological site is also witness to disruptions and a simulation of the place, by the in-situ renaturalization of the ecosystem to look more „proto-historical,“ specifically by the inclusion of autochthonous species that stand out from the surrounding eucalyptus landscape. Our communication proposal is to share this archaeological reading of a site that is transhistorical and that allows us to understand, from this diachronic stratigraphy, how archaeological heritage is shaped by its past, how it influenced its present and may influence the future. We propose this methodology as an important tool of the archaeological imagination for the preservation and understanding of the history of archaeological spaces and its post-materialities, as well as possibilities for new post-nostalgic practices.

11 ART & ARCHAEOLOGY - EXPERIMENTS IN CREATIVE CO-PRODUCTION

Abstract author(s): MacGregor, Gavin (Archaeology Scotland) - McFadyen, Lesley (Birkbeck, University of London)

Abstract format: Oral

Stereotypical modes of production, ranging from lonely garret artist to highly routinised technocratic archaeological field recording teams, distract from the complexity of forms of collaboration and expression which are negotiated through arts, culture and heritage.

How then, facing significant constraints and addressing fundamental challenges, do we mobilise to support greater creativity and begin transcending the realities we encounter in different domains of archaeological practice? How do we enable safe spaces to support experimentation and growth among those who wish to extend their practices? Could a clearer alignment of shared purpose help in rebalancing structural asymmetries? Do some archaeological deposits allow for more experimentation and risk taking? Could different processes of co-design, and other forms of collaboration, allow for the emergence of renewed curiosity and more effective care?

Beginning with a short introductory presentation, an inter-active ‘micro-charrette’ will be facilitated which begins to explore how we could enable creative co-production as a community of practice and seeks to identify opportunities for future shared action.

364 ARCHAEOLOGY OF THE LIMES - ROMAN SETTLEMENTS AND ROMAN MILITARY PRESENCE ON THE MARGINS OF THE EMPIRE

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Komar, Paulina (Uniwersytet Kardynała Stefana Wyszyńskiego w Warszawie) - Karasiewicz-Szcypiorski, Radosław (Polish Centre of Mediterranean Archaeology, University of Warsaw) - Koch, Julia (Justus-Liebig-Universität Gießen) - Czapski, Maciej (University of Warsaw) - Hamburg, Jacek (Krukowski Research Center)

Session format: Regular session

Roman frontiers during the time of the greatest extent of the imperial power were about 5000 kilometres long and stretched from the northern coast of Britain over the Atlantic Ocean, the Black Sea, the Red Sea and through North Africa back to the Atlantic Ocean. They ran through different climatic zones, biological ecosystems and ethnic areas bonding diverse landscapes and cultures and connecting them to the centre of the Empire.

The rchaeology of the limes allows us to understand how the Romans coped with adapting their fortification system to very different environmental conditions and attitudes of the conquered people. Although each military fort had generally the same architectural pattern and the Roman army in general shared the same diet requirements and consumer practices, each military landscape of the Empire demanded new ways of (re-)creating Roman military lifestyle in different circumstances.

We welcome presentations that take multidisciplinary approaches to Roman fortifications and their associated settlements across the Empire to demonstrate, from different perspectives, how remote peripheries functioned within the network of the globalising Roman world.

ABSTRACTS

1 ROMA VERSUS SCYTHIA. WHAT WE KNOW ABOUT THE MOST POORLY UNDERSTOOD AREA OF ROMAN MILITARY STATIONING OUTSIDE THE EMPIRE

Abstract author(s): Kubrak, Oskar (Polish Centre of Mediterranean Archaeology, University of Warsaw)

Abstract format: Oral

Despite the vast territorial extent of Scythia, we can only speak of the presence of Roman troops in this area with regard to the northern Black Sea coast and the interior of modern Romania, focusing on the territory east of the Aluta River, beyond the Limes Transalutanus. We date the influence of the administration of Moesia Inferior and the appearance of Roman troops here to the mid-1st century AD, and their influence ends with the invasion of the Goths around the mid-3rd century.

While the Greek cities that existed in this area have been excavated for more than 150 years, we still know little about Roman military presence despite the fact that soldiers resided here for almost 200 years. The strategic positioning and distribution of Roman outposts, however, indicate the importance of the border areas to the Roman Empire.

During this presentation, I will show the results of a project that has been ongoing for two years, focusing on research of the Roman military presence in Scythia. I will highlight questions arising from, among other things, the lack of publications on the results of research carried out on this area.

2 BRITAIN TO BLACK SEA: RITUAL LANDSCAPES AT ROMAN EMPIRE'S EDGE - EXPLORING STRATEGIES OF RESILIENCE

Abstract author(s): Koch, Julia (Institute of Classics, University of Giessen)

Abstract format: Oral

Throughout the vast Roman Empire military landscapes were clearly dominated by the garrison architecture of legionary and auxiliary forts and fortification systems. Whereas the Roman military lifestyle has been explored both in the forts and in the military vici in the recent past, less attention has been directed towards ritual landscapes surrounding Roman forts. This paper aims to approach the Archaeology of the limes from the rather global perspective focusing on artificially created sacred landscapes newly designed from scratch through the construction, for example, of shrines of Mithras and Meter (Cybele), sanctuaries, and monumental tombs. In this talk I apply the diaspora model to Roman funerary culture and visual expressions of lived religion very closely connected to sepulchral cult in military cemeteries along the northern frontiers of the Roman Empire as far as the southern Pontic coast. Thereby I investigate how military communities dwelling along the frontiers employed specific strategies in order to establish a home away from home both for the dead and the living as a means of building social and cultural resilience. The recently excavated Arnsburg tumulus and its domus aeterna furnished with hunting and bathing equipment otherwise widely distributed in the Middle Danube region thus provides my starting point on the Upper German limes in Giessen County. It enables me to analyse cross-regionally in a few case studies how culturally diverse, uprooted people serving in the Roman army may have strengthened and visually communicated their cultural identity and social cohesion along the edges of the Roman Empire for individual and sustained human well-being. These cultural imprints may further allow us to trace levels of connectivity between ecologically diverse landscapes linking the Roman East and West to demonstrate how people living in remote peripheries engaged with Imperial politics and the globalising Roman World.

3 MITHREUM IN TYRAS (BILHOROD-DNISTROVSKYI)? A NEW LOOK AT A BUILDING WITH AN APSE BEHIND THE WALLS OF A ROMAN CITADEL

Abstract author(s): Karasiewicz-Szczypiorski, Radoslaw (University of Warsaw, Polish Centre of Mediterranean Archaeology) - Saveliev, Oleh (National Academy of Science of Ukraine, Institute of Archaeology) - Misiewicz, Krzysztof (University of Warsaw, Faculty of Archaeology)

Abstract format: Oral

An apsidal building at Tyras (Bilhorod-Dnistrovskiy, Ukraine), discovered by an Ukrainian-Romanian expedition, is known in the literature. This building has never been explored in its entirety, because it is situated partly under the road leading to the nearby Turkish fortress of Akkerman. The predominant view among the scientists who participated in the excavation assume that the apsidal building was an Early Medieval church.

This interpretation of the building's function, however, seems unlikely for a few reasons. First, archaeological layers and artefacts found inside the building date to the period when a Roman garrison was stationed in the neighbouring citadel (2nd century and 1st half of the 3rd century AD). Furthermore, the building is located just outside the walls of the aforementioned citadel. The size and proportions of the building are also not reminiscent of early churches known, for example, from the Chersonesos Taurica.

Geophysical surveys carried out in 2021 in the area of the road have made it possible to reconstruct the plan and dimensions of the building with the apse. This brings us one step closer to clarify the function of this apsidial building as a possible Mithraeum. During the presentation, results of the geophysical survey and analogies for the building with the apse will be offered.

4 A CULT DEPOSIT OF LOCAL POTTERY IN THE APSAROS? CONTACTS BETWEEN THE INHABITANTS OF THE COLCHIS AND THE ROMAN ARMY

Abstract author(s): Lockley, Natalia (Warsaw University, Polish Centre of Mediterranean archaeology)

Abstract format: Oral

Systematic archaeological excavations ongoing at the Apsaros Fort on the eastern Black Sea coast in modern Georgia since 1995 have yielded a large amount of movable artefacts, the most abundant of which are fragments of ceramic vessels. A significant part of this assemblage is related to the period of the fort's operation in the 1st to 3rd centuries AD. In addition to imported pottery (such as amphorae and terra sigillata), the majority are locally produced ceramic vessels (so-called Colchis amphorae, tableware, and kitchenware). During an excavation campaign in 2021, a deposit of local kitchenware was discovered in one room of a hypocaust cellar in its foundation layer. Can we thus speak of a cult deposit and why were vessels of local production used?

In this talk the deposit will be presented first and subsequently connected to broader interaction between the fort crew and the local population. Furthermore, the use of locally produced vessels as foundation offerings provides one starting point for future analysis of ritual practices at the Apsaros Fort.

5 FEEDING THE ROMAN ARMY ON THE MARGINS OF THE EMPIRE

Abstract author(s): Komar, Paulina (Uniwersytet Kardynała Stefana Wyszyńskiego w Warszawie)

Abstract format: Oral

Supplying Roman camps on the limes was not an easy task as it involved a combination of local, regional and interregional products and distribution channels. The aim of this study is to analyse the patterns of supply of Roman military camps on the Upper and Lower German Limes in amphora borne products in order to understand how the empire dealt with organising provisions of wine, olive oil and fish sauces, that means foodstuffs that were not available on local or regional markets.

Proportional share of different amphora types in the total assemblage of transport containers will be analysed for each site and these proportions will be set together with distances from different areas producing wine, olive oil and salted fish derivatives, in order to create potential commercial networks. Distances will be approximated using ORBIS, a Stanford Geospatial Network model of the Roman World. Finally, regression analyses showing the relation between the volume of foodstuffs from different areas and the potential costs of their transport will be used in order to verify which foodstuffs were imported to the Roman camps according the scheme that would resemble market distribution and when other factors, such as state commands/special commercial links etc., were much more important. Such analyses will help us to understand the potential role of *annona militaris* in supplying the Roman camps situated on the margins of the empire.

6 PROVENANCE, PRODUCTION TECHNOLOGY AND 14C DATING OF IRON BALLISTA BOLTS TO ADDRESS THE ROMAN IRON INDUSTRY AT THE GERMANIC LIMES

Abstract author(s): Stepanov, Ivan - Brauns, Michael - Friedrich, Ronny - Knapp, Hannes (Curt-Engelhorn-Zentrum Archäometrie gGmbH) - Langgartner, Anna (Archäologisches Landesmuseum Hessen, Römerkastell Saalburg) - Geschwinde, Michael (Niedersächsisches Landesamt für Denkmalpflege Regionalreferat Braunschweig)

Abstract format: Oral

This study addresses technological and economic aspects of the Roman iron industry both along and beyond the Germanic Limes via a comparative scientific analysis of 18 ballista bolts from the Harzhorn Battlefield (Lower Saxony) and the Saalburg Fort (Hesse) dated to the Imperial period (1st-3rd cent. AD). All projectiles are characterized by a standard shape, a square cross-section of the point and a nail-fastened socket, which allows us to identify them as projectile points of high-precision torsion powered weaponry. The undertaken multidisciplinary approach incorporates investigation of the manufacturing technology via metallography, provenance via osmium isotopy and LA-ICP-MS, archaeobotanical identification of the plant species utilized in the shaft of projectiles, as well as the AMS

dating of steel. The preliminary results suggest that the objects were produced via common blacksmithing techniques from heterogeneously carburized iron. The use of several probably local ore sources can be envisaged, supporting the identification of items as mass-produced goods, the manufacturing of which was not significantly affected by time constraints and spared reliance on long-distance supply networks. This likely contributed to the stability of the Roman military presence at the limes.

7 THE CULT OF SÎN OF HARRAN AND THE ROMAN EASTERN FRONTIER: INDIGENEITY AND LEGITIMACY

Abstract author(s): Dandrow, Edward (University of Central Florida)

Abstract format: Oral

The Roman imperial period saw the “revival” of ancient Syro-Mesopotamian cults, one of which was that of the moon-god Sîn of Harran. Once a state god during the Late Hittite, Neo-Assyrian, and Neo-Babylonian periods, his cult was neglected during the Achaemenid and Hellenistic periods. Yet, during the first through third centuries AD, as inscriptions found at Soğmatar and Hatra reveal, we find the dynasties at Edessa and Hatra invoking Sîn as a source of political and military power and legitimacy. Roman encroachment upon and assimilation of Osrhoene and Hatra forced local cults to adapt to new political realities, and while the character and cult of Sîn did change over time Roman imperial authorities recognized it as an ancient, indigenous, and exotic source of political legitimacy in the region. Thus, emperors campaigning in the east undertook pilgrimages to Harran and gave special privileges to the city. By doing so, they not only aspired to obtain divine favor for their wars but also to integrate themselves into a regional system of religious and political traditions that were believed to originate from an “Assyrian” royal past. Sîn never acquired the popularity and broad appeal among the soldiers that *inter alia* Jupiter Dolichenus and Mithras had, but the mutual support between emperor and the moon-god was seen as essential to Roman power at the eastern frontier. Thus, this paper examines the nature and extent of Roman engagement with the cult of Sîn of Harran and seeks to add to our understanding of the interplay and negotiation between local “indigenous” cults and Roman political and military authority.

8 DAJANIYA IN JORDAN – ROMAN MILITARY CAMP ON LIMES ARABICUS- NEW FINDINGS

Abstract author(s): Misk, Lukasz - Kopij, Kamil - Bodzek, Jarosław (Jagiellonian University in Kraków) - Babucic, Nikola (Hamburg University) - Puniach, Edyta (AGH University of Science and Technology) - Ćwiakła, Paweł (AGH University of Science and Technology)

Abstract format: Oral

Dajaniya is one of the largest Roman forts in Jordan, located 30 km northeast of the legionary fortress in Udruh and 78 km south of the legionary fortress in Lejjun. The archaeological work done so far has not provided a final answer as to when the fortress was built. The material obtained in field surveys and sondage excavations was mainly pottery from the Late Roman and Early Byzantine periods (up to the early 6th century). It also included earlier pottery, however, dating back to the early 2nd century CE. Some scholars suggest it was built in the early or late 2nd century CE, but no architectural evidence had been found to support this claim. The aim of our paper is to present the outcome of testing two hypotheses: the first hypothesis involves the existence of vicus and civilian buildings around the fort; the second, hypothesis concerns the possible existence of a military fort in the second century AD, which has not yet been confirmed. Our paper will present the results of geophysical surveys conducted in late 2022 in the immediate vicinity of the fort. The research was carried out by scholars from the Institute of Archaeology of the Jagiellonian University in collaboration with the University of Hamburg and AGH University of Science and Technology in Krakow.

9 THE HILLS HAVE EYES – RECONSTRUCTING THE ROMAN WATCHTOWERS’ SYSTEM VOLUBILIS NEIGHBOURHOOD

Abstract author(s): Czapski, Maciej (Faculty of Archaeology Warsaw University)

Abstract format: Oral

Roman North Africa aroused a keen interest of the researchers of antiquity due to the numerous remains of both civil and military architecture. The ancient authors testify to the turbulent history of Rome’s relationship with local societies. Despite many years of research and numerous publications, we still have meagre information about the functioning of border fortifications in this part of the Roman Empire. The Tingitana Frontier Project – conducted by a team of Polish and Moroccan archaeologists - is trying to unravel the riddles concerning the southern border of the province of Mauretania Tingitana where the chronology of the founding and extension of the system of defense has not yet been established. The research of our mission since 2018 aims to examine and analyse the defense systems of the border towns of this province of the Roman Empire, taking as case study the city of Volubilis. The surroundings of Volubilis were protected by auxiliary units located in three forts not far from the city. During the season in 2022 the

field works allowed us to confirm the existence of the first-of-its-kind Roman watchtower in Mauretania Tingitana. Preliminary results from that season are giving us interesting insight into the security system of the city of Volubilis. With this contribution I answer some questions about the relations between the observation points and the Roman auxiliary forts existing in this region.

A. ALL'S QUIET ON THE EASTERN FRONTIER: THE PANNONIAN LIMES IN MODERN CROATIA DURING THE LATE ROMAN PERIOD

Abstract author(s): Lukic, Katarina (Faculty of Humanities and Social Sciences, University of Zagreb)

Abstract format: Poster

The Pannonian limes, and particularly its stretch in modern Croatia, was a rural frontier zone where the army was indirectly responsible for establishing a monetised local market that subsequently gravitated towards and depended on urban centres in its vicinity. This talk focuses on the impact of regular coin supply to garrisons stationed at the forts along the 188km long Pannonian limes in modern Croatia and its local monetary economy during the Late Roman period through case studies. Special focus will be set on the cessation of monetary circulation in local satellite markets and thus the adaptation to new economic, administrative, political and social settings. The Roman economy, especially in the rural hinterlands, was probably never fully monetised, and barter was certainly present alongside coinage and used as an acceptable mode of exchange. Moreover, local customs largely dictated local exchange media in Late Antiquity. Thus, coins are not the sole evidence and indicator of the monetary system of an area. Other types of currency, like commodities, credits and loans, impacted monetisation as well. Therefore, apart from the Late Roman numismatic evidence, this paper also examines other everyday finds from military sites and identifies the relations of the limes with the surrounding area to get a clearer picture of the socio-economic context of the Pannonian limes in modern Croatia during the Late Roman period.

B. PORT FACILITY DISCOVERED AT ANCIENT CARSIMUM (HÂRȘOVA, CONSTANȚA COUNTY, ROMANIA)

Abstract author(s): Mototolea, Aurel - Nicolae, Constantin - Sodoleanu, Irina - Potârniche, Tiberiu (Museum of National History and Archaeology Constanta) - Caterinici, Cristina (Faculty of History and Political Sciences, Ovidius University of Constanța) - Stanc, Margareta (Faculty of Biology, Alexandru Ioan Cuza University of Iași)

Abstract format: Poster

Archaeological research started in 2020 in the fortress of Carsium (Hârșova) – point Old Port, led to the identification of a platform that is part of a port arrangement, possibly with the first phase dating back to the Roman period. This platform consists of large, rolled blocks – shows signs of use on the top. At least four phases can be identified in its existence, all marked stratigraphically also, which could correspond to some stages of repair of the already existing elements. Archaeological material without a definite context was also recovered, mainly ceramic fragments and metallic construction material.

Following the research, it can be preliminarily concluded that the port structure is composed of:

- a) massive wall, about 3 m thick, caught between the natural rock on the left, and the Roman-Byzantine phase to the east;
- b) small pier, made of stone of different sizes, shaped on all sides, fastened with mortar. The access behind the wall on the wharf was made through a passage bordered by the natural rock on the left and the wall on the right;
- c) the quay in front of the pier, remains with traces of rolling due to the action of water (pereat quay).
- d) the platform is the first construction dedicated to port activities in the western part of the ancient / medieval port area of Carsium;
- e) the level of treads marked by traces of mortar corresponds either to the repairs of the level of the platform or to its lifting with another seat.

This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-III-P4-PCE-2021-1180, within PNCDI III.

'BEYOND SPOLIA.' A CROSS-CULTURAL COMPARISON OF RE-USED DECORATED STONES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Ljung, Cecilia - Jones, Andrew (Department of Archaeology and Classical Studies, Stockholm University) - Diaz-Guardamino, Marta (Department of Archaeology, Durham University) - Oehrl, Sigmund (University of Stavanger, Museum of Archaeology)

Session format: Session with keynote presentation and discussion

The re-use of building materials, the phenomena broadly characterized as 'spolia', has long been recognized in Roman and Medieval contexts, particularly in the construction of early stone churches. However, the re-use of decorated materials, including sculpture, is also a recognized phenomenon during later prehistory, particularly in the construction of Irish, French, and Iberian passage tombs, and the building of Bronze Age stone cists in Iberia, Britain, Ireland, Sweden and Norway.

In this session we argue that it is no longer tenable to regard the use of 'spolia' in terms of expediency; archaeologists have long argued for the deliberate selection, manipulation, and placement of previously decorated or carved stones. But is there a pattern to the re-use of decorated stones? The aim of this session is to bring together researchers examining decorated and carved stones in the Neolithic and Bronze Age with their colleagues in the late Iron Age, Roman and Medieval periods. Are there similarities in patterns of re-use across these time periods, or do we recognize distinct practices in certain periods? Do we as researchers approach the phenomena of re-use in different or similar ways in terms of theoretical framing and interpretative models? Our aim in bringing together prehistoric, Classical and early Medieval researchers is to examine what each might learn from the other, thereby enriching the debate around the re-use of decorated stones and the use of the past in general.

ABSTRACTS

1 BEYOND SPOLIA: AN INTRODUCTION

Abstract author(s): Jones, Andrew (Stockholm University)

Abstract format: Oral

The re-use of building materials, the phenomena broadly characterized as 'spolia', has long been recognized in Roman and Medieval contexts, particularly in the construction of early stone churches. However, the re-use of decorated materials, including sculpture, is also a recognized phenomenon during later prehistory, particularly in the construction of Irish, French, and Iberian passage tombs, and the building of Bronze Age stone cists in Iberia, Britain, Ireland, Sweden and Norway.

This introduction will reconsider the utility of the term 'spolia' to characterize this phenomenon, and will seek to re-situate the re-use of decorated materials in terms of practices of remembrance, commemoration, evocation and display. I will do so by discussing relevant examples from passage tomb contexts in Neolithic Ireland, Bronze Age stone cists in Britain and Late Iron Age and Medieval decorated standing stones in Britain and Sweden.

This paper forms an introductory framework for the session and its contributors.

2 RECYCLING PASTS. IBERIAN MEGALITHIC CASES

Abstract author(s): Prmitiva, Bueno - Rosa, Barroso - Rodrigo, Balbín (University of Alcalá)

Abstract format: Oral

Stelae and menhirs before to the construction of some megaliths has been considered as one of the issues of the antiquity of these architectures. This hypothesis justified the primacy of the Breton megaliths over other territories of Atlantic Europe.

In the last years our team has documented evidences of pieces recycled in the Iberian megaliths. Stelae and menhirs previous to the construction of the megaliths, remaked in moments of its use, re-meant in procedures of closing, add to information of other elements recycled like mobile decorated pieces, or the bones that appear in secondary burials. To recycle memories, resignify them, and to create new pasts are part of the social systems that that identify megalith building groups.

In this presentation we propose to characterize some case studies and their implications in how megaliths are used transforming from these processes of continuous recycling. In order to achieve this, we will take as an example some Iberian megaliths. The number of sites where we have documented these processes is widespread in Iberian, pointing out that the argument of the antiquity of the Breton megalithic focus, based on this aspect, needs to be rethought.

3 FROM LIGHT TO DARKNESS: THE AFTERLIFE OF ATLANTIC ROCK ART

Abstract author(s): Valdez-Tullett, Joana (Wessex Archaeology)

Abstract format: Oral

The Neolithic tradition of Atlantic Rock Art is known for its circular imagery but also its typical landscape setting. While a defining character, the lack of associated archaeological contexts hinders research and there are still many open questions, namely related to chronology. In the mid-3rd millennium BC this relationship with the landscape seemingly changes. Carved blocks were then often placed within funerary chambers, whether resulting from quarrying of decorated outcrops, or produced specifically for this purpose. This transition from an open-air context to a secluded and dark chamber implies an important change of perception towards the rock art. Although many of these blocks were recovered by antiquarians and their archaeological contexts were not necessarily preserved, their co-presence with other types of material culture, human and animal remains, means that they hold valuable information which is not available for the decorated outcrops in the landscape. This talk will discuss the preliminary results obtained from a contextual archaeological approach to Atlantic Rock Art, which aimed to understand the implications of this use and/or re-use of rock art in funerary monuments, reflect on social transformations that may have resulted in this change of perception and how these affected prehistoric societies.

4 THE REUSE OF STANDING STONES, STELAE AND STATUE-MENHIRS IN BRONZE AGE IBERIA (C. 2200-850 BC): AN OVERVIEW

Abstract author(s): Diaz-Guardamino Uribe, Marta (Durham University)

Abstract format: Oral

Researchers have long recognized the reuse and transformation of rock art, standing stones, stelae and statue-men-hirs in late prehistoric Europe. In the Iberian peninsula, the reuse and transformation of these elements during the Bronze Age is varied but significant. This paper will provide an updated overview of the phenomenon, including an assessment of possible patterns of reuse and their evaluation within broader Iberian and European contexts and the social and historical transformations documented during this period. The presentation will finish with some theoretical and methodological considerations related to the research of this type of archaeological evidence.

5 TWO SPOLIA – ONE PICTURE STONE: SOME EXAMPLES FROM A PH.D. PROJECT ON MIGRATION PERIOD PICTURE STONES FROM GOTLAND

Abstract author(s): Strehlau, Hannah (Center for Baltic and Scandinavian Archaeology- ZBSA)

Abstract format: Oral

The picture stone tradition on the Swedish island of Gotland started during the Migration Period (400-550 CE). With very few exceptions, almost the entire corpus of monuments of this time-period, called group A, were intentionally destroyed, and re-used as spolia in early medieval Gotlandic churches, or in younger graves, respectively. Roman tombstones were treated in a similar way, especially those from the former province of Hispania, which could have served as possible models for the early Gotlandic picture stones.

In this presentation, I will draw from the results of my recently finished Ph.D. thesis. This includes examples of decorated stone monuments that are comparable to the early picture stones as well as a case study from Gotland: The discovery of the correspondence of two well-known picture stone fragments serves as an example to demonstrate the second life of these stone sculptures after their original use. The two fragments, which once belonged to the same stone monument, were re-used as spolia in two different Gotlandic churches. This circumstance allows for a discussion on the intentional destruction, deliberate selection, manipulation, and placement of different parts of this decorated monument.

6 PERCEPTIONS OF THE PAST: PICTURE STONES AS SPOLIA IN MEDIEVAL CHURCHES ON GOTLAND

Abstract author(s): Ljung, Cecilia (Stockholm University)

Abstract format: Oral

Gotlandic picture stones constitute one of the most enigmatic legacies of Iron Age Scandinavia. Richly ornated stone monuments were erected on Gotland for almost a millennium: at least from the Migration period until the early Middle Ages (c. 400-1100 AD). The imagery of the monuments, their shapes and uses changed over time, and by the late 11th century the picture-stone tradition, with its deep roots in pagan society, was transferred into a Christian context. Yet, interaction with this type of carved stone monument did not cease with the end of their production, but continued during the medieval period, and sometimes later, primarily through reuse in stone churches.

Today more than 600 picture stones are known, ranging from small fragments to monuments several meters tall. Around fifty percent of the material has been found in church buildings. However, the reuse of picture stones has attracted little scholarly interest and simplistic models dominate. Either reuse is given a practical explanation, where picture stones are seen as readily available building material, or a symbolic interpretation, either with positive connotations, as a way of reconnecting with the past, or as a negative act of condemnation, showing the superiority of the Christian faith. This paper will explore the reuse of picture stones and its different trajectories in time based on a detailed on-site study of their find contexts in churches. It considers aspects of visibility, accessibility, fragmentation, wear, and spatial relations to architecture and other types of spolia.

7 MONUMENTS, IMAGES AND THE GREAT POTENTIAL OF SMALL FRAGMENTS – RE-USE OF EARLY CHRISTIAN GRAVE MONUMENTS IN THE 12TH-AND 13TH-CENTURIES

Abstract author(s): Nyqvist Thorsson, Anna (Västsvensk arkeologi)

Abstract format: Oral

During the 11th century, lavish grave monuments with rich ornamentation and runic inscriptions were made in the south-central Sweden. Towards the end of the century, these monuments had played their part, instead new types of underground stone coffins to keep the dead body were constructed. By the end of the 12th century, fragments and parts of early Christian monuments were re-used as building materials in stone coffins as well as in early stone churches.

The act of fragmentarization of old monuments has been considered a deliberate strategy by different scholars, either as part of struggles for political power, or as symbolically charged re-use. However, little attention has been given to variations in the practice of re-use in mortuary settings.

This study takes a starting point in theoretical frameworks such as social practice theory and aspects of performance theory. Based on a detailed analysis of diversities within the material, it shows how ornamented parts of older monuments were deliberately and consciously placed with the images either towards the inside of the coffin and the dead body, or towards the outside and the audience of the funeral. The study also identifies regional differences in the re-use of early Christian grave monuments.

In the act of dismantling the grave monuments from the past and re-using of them in new mortuary contexts, the material became actively involved in constructing a new social context around the dead. But above all, it also created a new social context around the living family. This made the fragments of old monuments an active part in social and historical processes of the present.

8 THE STAVANGER PISCINA – CARRIER OF THE LESS SACRED

Abstract author(s): Buer, Margareth (Museum of Archaeology, University of Stavanger)

Abstract format: Oral

The Stavanger piscina is the only remaining example in Norway of a double-arched Gothic 13th century piscina. Over the years much attention has been drawn to the splendid carved head placed on the wall right above, believed to be that of king Magnus Lagabøter (the Lawmaker). However, it is time to lift the piscina from its subordinate position and look at its function and significance. Piscinas are part of a group of architectural elements of medieval churches that served a specific function in relation to the sacraments. From a post-modern, perspective the Stavanger piscina may just be seen as a beautifully carved niche in the choir wall. From a medieval perspective, on the other hand, the piscina was the gateway which transported leftover sanctified water, oil, and wine from liturgic ceremony to consecrated ground. After the Reformation, this physical and mental gateway got gradually closed and the piscina became just that beautiful niche. This paper will try to approach the piscina from the perspective of the medieval sacramentals, the lesser sacraments, those objects and actions which point towards the divine.

9 REPLICATING THE PAST: THE CASE OF THE DOCUMENTED CARVED SYMBOLS IN KULLA IN THE TERRITORY OF REPUBLIC OF KOSOVA

Abstract author(s): Shala, Lekë - Igrishta, Kaltrina - Cousseau, Florian - Besse, Marie (University of Geneva)

Abstract format: Oral

The territory of Kosova - Ancient Dardania which occupies a plateau, surrounded by high mountains, midway between the Mediterranean and the larger Balkan expanse – sits at an intersection, where various roadways converge. Its archaeology begins in early prehistory, stretching across the Metal ages, into and through Roman and Medieval times.

Within the framework of the project* “Memory in Stone”, 579 carved symbols in 107 objects were documented in the territory of Kosova, mainly in Kulla i.e. albanian traditional stone houses, dating from the 16th to the 20th century A.D., which are also found on the territory of Albania, Montenegro and Northern Macedonia. They were considered

as a safe shelter, located in a well-thought-out area in harmony with the surrounding facilities, which guaranteed the control of the landscape and the privacy of its residents. In addition to the living spaces, the protective function explains its character and its high degree of fortification, ensuring security in times of war or blood feud. According to the ethnographical sources and residents of the houses, the symbols have a magical character and they provide help in difficult times of survival, “to protect from the evil eye” and to bring prosperity, they embody the idea of the sacred in nature and the surrounding environment. A number of symbols are reintegrated into everyday use through the copying of motifs or the re-use of decorative stones from antiquity and medieval times. Their symbolism is characterised by a series of figures of a supernatural nature, with an extraordinary variety of figurative depictions, cosmological, anthropomorphic, zoomorphic, floral, geometric, etc. Symbols reflect cultural meanings and furthermore enrich our understanding of past social organisation, people’s thoughts and beliefs, and their relationship with the environment.

* Under the direction of Kaltrina Igrishita and Lekë Shala.

366 MEGALITHS AND GRAPHICAL MARKERS IN LANDSCAPE: NEW TECHNIQUES OF DOCUMENTATION

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Navajo-Samaniego, Esther (University of Alcalá) - Vázquez-Martínez, Alia (University of Santiago de Compostela; University of Alcalá) - Castro Teixeira, Joana (University of Porto)

Session format: Regular session

Megalithism is a long-lasting architectural phenomenon that has characterised Late Prehistory landscapes. The classical view of its expansion was limited to Europe and more specifically to the Atlantic façade. However, megalithic architecture has a much wider distribution, ranging from south-western Europe to Melanesia, the Near East and the Indian subcontinent.

Traditional historiography has studied megaliths from a perspective focused on architectural typology and their archaeological remains. Nowadays, efforts are concentrated on C14 chronologies, DNA and stable isotopes of the human bones located in them. Besides, the introduction of new documentation and data processing techniques has been a novelty in the study of megaliths and graphical markers (as, for example, rock art), giving a prominent role to the landscape in which they are integrated.

This session aims to gather young researchers specialised in Neolithic and Chalcolithic periods, beyond the classical European borders. We welcome papers exploring any aspect of megalithic landscapes, theoretical and practical approaches, documentation and data collection, graphical markers codification and distribution dynamics. The application of new methodologies provides an essential line of research for the study of occupation dynamics, transformation and recognition of the territory in which they are inserted.

ABSTRACTS

1 BI AND TRICOLOR SCHEMATIC PAINTING IN THE LOWER DOURO BASIN (NORTH OF PORTUGAL). COMPARING ROCK ART AND MEGALITHIC ART

Abstract author(s): Teixeira, Joana (CITCEM - Faculdade de Letras da Universidade do Porto) - Sanches, Maria de Jesus (CITCEM-FLUP) - Ramos, Nuno (Morph – Geociências, Lda.) - Almeida, Miguel (Dryas Octopetala, Lda; Morph – Geociências, Lda.)

Abstract format: Oral

Bi or tricolor paintings are rare in open air rock art contexts. Contrarily, it is frequent in dolmens’ chambers or corridors, where red, black, and white pigments are widely combined.

However, in the lower Douro basin (in the river Tua valley area) two rock-shelters display bicolor motifs: Cachão da Rapa (Carrazeda de Ansiães), known since the 18th century, and Ribeira da Pousada 6, in Serra de Passos-Santa Comba (Mirandela). The latter is part of the biggest concentration of prehistoric painting in Portugal - the paintings of Passos-Santa Comba- Garraia mountain.

These two exceptional sites, whose motifs are painted in red/orange and black/blue, remain until now the only occurrences of bicolor motifs across this vast region.

At same time, in the regional context, megalithic painting is dominated by red motifs (Vilarinho da Castanheira, Zedes or Fonte Coberta), while in Madorras Mamoá 1 there is also a black motif superimposed to other engraved ones.

We aim to present the results of the photogrammetric and multispectral records of both sites (Cachão da Rapa and Ribeira da Pousada 6), focusing on the panels’ motifs and general aesthetics in the context of the known regional

prehistoric paintings, followed by a discussion of the sites' possible funerary use, considering their protected locations and morphology.

2 DIALOGUES BETWEEN THE NORTH AND SOUTH OF THE IBERIAN PENINSULA IN OPEN-AIR DECORATIONS ASSOCIATED WITH MEGALITHIC BUILDERS

Abstract author(s): Vázquez-Martínez, Alia (University of Santiago de Compostela, CISPAC; University of Alcalá) - Jiménez-Gisbert, Guillermo - Navajo-Samaniego, Esther (University of Alcalá)

Abstract format: Oral

Traditionally, open-air rock art in Northwest Iberia has been studied in relation to elements of the surrounding terrain, such as lithology or the proximity to roads or watercourses, among others. These investigations have not taken in consideration elements produced by past societies and which are part of the territory, such as megalithic constructions. However, in Southwest Iberia, an integrating perspective between open-air art and megalithic art have been established, finding associations between them through carving techniques and graphic resources.

This communication aims to show the results obtained by studying the characteristics of open-air rock art in relation to natural environment and megalithic art. For this purpose, we will take as a case study two areas far from each other: The International Tagus area (Southwest Iberia) which has already been the subject of this type of work, and Galicia (Northwest Iberia), where there is a lack of research works linking open-air rock art and megaliths.

In both areas, a detailed study of engraved and pictorial motifs is being carried out in field using photogrammetry and geolocation. The combined analysis of different human manifestations in landscape will allow us to make a first approach to the occupation of the territory in both locations, as well as to observe some of the connections based on their symbology.

3 THE BURACO DA PALA ROCK-SHELTER (PASSOS-SANTA COMBA MOUNTAIN, MIRANDELA-PORTUGAL). SCRUTINIZING NEOLITHIC-CHALCOLITHIC SITE FUNCTIONS AND PURPOSES

Abstract author(s): Sanches, Maria - Teixeira, Joana (CITCEM-FLUP) - Ramos, Nuno (Morph – Geociências, Lda.) - Almeida, Miguel (Dryas Octopetala, Lda; Morph)

Abstract format: Oral

The Buraco da Pala shelter is part of a impressive rock escarpment in the «Serra de Passos-Santa Comba», and visually dominates a wide surrounding territory, thanks to its privileged topographic location. This rock-shelter opening is an imposing geological crevice, which appears wide and high at its entrance (about 80m² in area), extending into the interior of the escarpment through a narrow and very long gallery (about 27m long).

It was excavated in the 1980's by one of us (MJS), delivering occupation levels ranging from the ancient Neolithic to the end of the Chalcolithic. Archaeological and archaeobotanical studies have shown that: (i) the rock-shelter was used as a seasonal habitat during the Neolithic, with clear evidence of the practice of cereal and pulse agriculture; (ii) its use in the Chalcolithic was eminently socio-political, i.e. as a place of collective consumption and destruction by fire of agriculture and gathering products.

In accordance with these human occupations, we found in this shelter four panels with schematic paintings, two in the photic, wider area and two others in the extreme end of the narrow gallery.

This paper intends to connect the previous studies with (i) the photogrammetric record of the whole rock-shelter and the multispectral record of the painted panels and (ii) to compare the imagery of its paintings (namely the figures known as "oculados") with other examples from different regional contexts, with emphasis on megalithic and open-air rock art.

This paper is part of a heritage education project in archaeology: ESCARPARTE. So, we will also put to the scrutiny of this session the type of textual and graphic narrative that will be disseminated about the social and ideological Neolithic and Chalcolithic landscape, discussed here.

4 THE MEGALITHIC COMPLEX OF BRÚ NA BÓINNE, IRELAND: LANDSCAPE, CONTEXT AND SPATIAL ORGANIZATION

Abstract author(s): Davis, Stephen (University College Dublin) - Rassmann, Knut - Banffy, Eszter (Romano-Germanic Commission, Frankfurt)

Abstract format: Oral

This paper builds on the results of over a decade of remote sensing and geophysical survey at the Brú na Bóinne World Heritage Site, Ireland. Brú na Bóinne is one of Europe's most significant megalithic landscapes, with over 45 megalithic tombs, including some very large examples, a remarkable density of megalithic art and also a substantial and diverse corpus of post-megalithic earthen and timber monuments. It is increasingly clear that the distribution of these

features within the landscape is not continuous or random, and that there are rules governing at least the preservation of, but most likely also the construction location of a range of monument classes within the area. There are also areas that seem to be almost devoid of obvious archaeological traces – perhaps deliberately so. This paper will present and discuss some of these patterns in the context of the existing dataset, consider the basis for some of this patterning and also consider the role of megaliths within this landscape, including as foci for later activity both in prehistory and in later periods.

5 ANTHROPOMORPHIC ORTHOSTATE-STELAE OF TWO DOLMENS FROM MURÇA (PORTUGAL). ITS CONTEXTUALIZATION IN THE SOCIAL AND IDEOLOGICAL PREHISTORIC LANDSCAPES OF THIS REGION

Abstract author(s): Barbosa, Helena - Sanches, Maria de Jesus (FLUP - Faculty of Arts and Humanities of Oporto University; CITCEM - Transdisciplinary Research Centre «Culture, Space and Memory») - Almeida, Miguel (Dryas / Octopetala) - Aires, Sílvia - Ramos, Nuno (Morph – Geociências, Lda) - Castro Teixeira, Joana (FLUP - Faculty of Arts and Humanities of Oporto University; CITCEM - Transdisciplinary Research Centre «Culture, Space and Memory»)

Abstract format: Oral

This paper discusses the Late Prehistoric landscapes of the Portuguese lower Douro basin through the study of some of its megalithic monuments: tumuli, dolmen, stelae and menhir statues.

Our case studies are two decorated dolmens in the municipality of Murça (Trás-os-Montes): Mamoá 1 of Castelo (excavated) and Mamoá 4 of Alto das Madorras. Based on the photogrammetric record of their engraved orthostates – two of which are completely anthropomorphized –, we aim to search for operating chains and subjective visual and technical options, including the stelae's geological characterization.

Given that regional archaeological research has produced pertinent radiochronometrical, ethno-archaeobotanical and archaeo-environmental documentation of the dolmens and their surrounding regions, along with open-air rock art in the same regional context, the interpretation of the “art” of the chambers and corridors will be equated on a broad relational and explanatory level.

As this paper is part of an heritage education project in archaeology: TSF/Territories without borders, we will also put to the scrutiny of this session the type of textual and graphic narrative to be disseminated about the social and ideological megalithic landscape, discussed here.

6 THE DOLMEN PHENOMENON IN THE SOUTHERN LEVANT DURING THE 4TH MILLENNIUM BC: THE CASE STUDY OF JEBEL AL-MUTAWWAQ, JORDAN

Abstract author(s): Caselli, Alessandra (Perugia University)

Abstract format: Oral

The megalithic phenomenon in the Southern Levant started to be massively attested at the beginning and during the 4th millennium BC, in the Late Chalcolithic and in the Early Bronze Age I. The area is constituted by several sub-regions and the identified megalithic features include standing stones, cairns, dolmens and tower-tombs. Therefore, megaliths were used to build structures linked to the rituality or to the funerary aspect, underlining the importance of the community work to realize such massive structures. For this reason, the analysis of the phenomenon and its evolution is crucial to better understand the ancient communities and their society.

The paper will focus on the dolmen phenomenon in the Southern Levant at the end of the 4th millennium BC. In particular, the case study of Jebel al-Mutawwaq (Jordan) will be presented. Here, a joint Spanish-Italian expedition is investigating the residential area and the megalithic necropolis outside the fenced settlement. The possibility to examine together the funerary aspect, with its rituals and habits, and the daily life inside the residential area allows to reconstruct the socio-economic organization and the cultic expression of the community in the proto-urban period, when features pertaining to urban societies started to be introduced, such as the fortification systems.

Because of the risks that dolmens are facing in the recent years due to the destruction of the archaeological remains to reuse the dolmens slabs, also the documentation of these structures is crucial to preserve them. For this reason, the Spanish-Italian team realized distinct maps of the dolmens in different years to verify the potential destruction of some of them. Furthermore, in the last years, 3D models of some dolmens have been realized with the aim to certify the conditions of the structures through the years.

7 PICKING UP THE PIECES: A MICRO-STRATIGRAPHIC AND TRANS-DISCIPLINARY APPROACH TO THE COLLECTIVE TOMBS OF HORTA DO JOÃO DA MOURA 1

Abstract author(s): Corga, Mónica (Dryas | Octopetala)

Abstract format: Oral

Recent archaeological research on the Southwestern Iberian Peninsula has shown that during the 3rd mill. BC, this region displayed a vast array of mortuary behaviours that show complex social and economic relations in which large enclosures play an aggregating role.

Our research studies the mortuary management of two tholoi tombs from Horta do João da Moura 1, located on the outskirts of the mega ditched enclosure of Porto Torrão (Ferreira do Alentejo, Portugal), an area where several clusters of funerary monuments have been discovered, in addition to the deposition of human bodies or remains inside pits or ditches.

Based on the assumption that death constitutes a critical moment for social cohesion and communal identity, the archaeological data available for each of the categories under analysis (human remains, artefacts, and architectures) are scrutinized through the application of thorough methodological protocols from archaeology, geoarchaeology, and archaeoanthatology. Our micro-spatial and micro-stratigraphic approach allows the discussion of architectures and artefacts, mortuary gestures, synchronic and diachronic tomb management strategies, and site formation processes.

Our results reveal a range of mortuary practices in the same burial site or even inside the same tomb, embedded in prolonged and intricate social processes that encompass discontinuous rhythms, polyphasic depositions, individual or mass displacements of human remains, and scenic displays of relics.

In addition, the archaeological record shows the existence of large scale economic and social interaction networks that are purposefully made visible during funerary performances.

369 MAKING AN IMPACT: DEVELOPING RESEARCH IN APPLIED BIOARCHAEOLOGY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Mckenzie, Catriona (University of Exeter) - Mack, Jennifer (University of Mississippi Medical Center) - Evis, Laura (University of Exeter) - Tilley, Lorna (Independent Researcher)

Session format: Regular session

Bioarchaeological research is uniquely placed to provide insights into the deep past, helping us to explore the lived experiences of people and communities, but it also has an important role in helping us to understand, evaluate and contextualise present-day challenges. Wider engagement with bioarchaeological research provides a means through which we can discuss complex and difficult issues such as slavery, racism, migration, climate change, social inequality, poverty, disability, care, and conflict. In recent years, interdisciplinary collaborations, particularly arts-based collaborations, have been key in addressing some of these difficult topics. This session seeks to explore how we can engage with wider audiences, and how we can move beyond public engagement to affect change through our research. We are seeking papers that provide examples of best practice, and hope to learn through these examples about the challenges and recommendations for developing the field of Applied Bioarchaeology. We are also interested in exploring the role of bioarchaeology in affecting change through advocacy and activism. We hope this session will prompt open discussions from different researchers across the EAA community, and inspire future research endeavours.

ABSTRACTS

1 CONTINUING BONDS: USING (BIO)ARCHAEOLOGY FOR BEREAVEMENT, GRIEF AND WELLBEING

Abstract author(s): Croucher, Karina (University of Bradford) - Booth, Jane (University of Wolverhampton) - Booth, Emmelia (National Lottery Heritage Fund) - Sutton-Butler, Aoife - Bryant, Eleanor - Coe, Mia (University of Bradford) - Dayes, Jennifer (Manchester Metropolitan University) - Giles, Melanie - Green, Laura (University of Manchester) - Walters, Elizabeth (University of Bradford)

Abstract format: Oral

While death is universal, responses to it vary widely, as can experiences of grief and bereavement. However, death and bereavement often remain challenging to discuss, despite the universality and inevitability of the topic. The Continuing Bonds and Dying to Talk projects use funerary archaeology to open up dialogues around death, dying, bereavement and loss, using the past as a distanced place from which to prompt discussion. In several linked projects, this approach has been used with a range of audiences, including health and social care professionals and students; psychologists and counsellors; young people and schools; and members of the public. Overwhelmingly successful, the projects demon-

strate a vibrant way in which the lessons we learn from bioarchaeology can have meaningful impact on experiences today. This paper provides an overview of the projects and results, including insights into our participants and the impact on their lives and experiences. It also reflects more broadly on the wider role that heritage and archaeology play for wellbeing today.

2 BENEATH THE SURFACE: AN ARCHAEOLOGY OF IMPAIRMENT AND DISABILITY IN HISTORICAL ICELAND AND ITS RELEVANCE TO THE FUTURE

Abstract author(s): Walser, Joe (National Museum of Iceland) - Kristjánsdóttir, Steinunn (University of Iceland)

Abstract format: Oral

Disability and quality of life in the past were discussed through case studies of skeletonised individuals from archaeological sites in Iceland. The presentation will discuss how impairment in the past, along with environmental constraints particular to the local climate, geology, environment and cultural history, may have led to social disability across time and regions in Iceland. The presentation discusses medical interventions/treatment and care, paired with historical information for context, considering historical and modern relevance of some of these cases.

Despite the potentially disabling environment across volcanic terrain and against challenging weather, care was evident in numerous cases, and people renegotiated their social roles within a demanding lifestyle based on farming and fishing. Though monasteries cared for those who could travel to them, care was typically the responsibility of individual members/laypersons of small coastal communities - especially prior to the establishment of monasteries, such as at Skriðuklaustur in Eastern Iceland, and likewise after their closure.

The results provide indications about life experience and the possible functional limitations these individuals may have faced. Moving to the present, little has been done to combat the systemic infrastructure problems that people faced in the past: cities are not designed in a way that is easy to adapt to people's needs, and businesses either cannot afford or do not place emphasis on meeting these. As a result, overcoming infrastructure problems often - again - ends up the responsibility of individuals invested in finding ways to make the city, its pathways and landmarks more accessible. In this context, the question becomes: how best can we use historic experience to drive current policy and practice?

3 BIOARCHAEOLOGY OF CARE OUTREACH: HOW LESSONS FROM THE PAST MAY HELP IMPROVE THE PRESENT

Abstract author(s): Saez, Roberto (Uniclaude International Christian University)

Abstract format: Oral

This presentation reports on (i) a series of initiatives aimed at making the results of evolutionary, bioarchaeological and anthropological research into the deep history of care and compassion readily accessible to the general public, and (ii) the creation of a transdisciplinary Spanish-language network of researchers working in this area.

The origins of human caregiving are closely tied to the development of behaviours we consider emblematically human: in particular, our readiness to cooperate for a greater good, and our skills in social organisation. The ability (and willingness) to provide health-related care likely played a crucial role in the success of the species that preceded us. Understanding past experiences of disability, care and compassion challenges popular perceptions of the past as a place of 'nature red in tooth and claw', and can help inform values and behaviours in today's society. Potential outcomes range from deeper appreciation of the universality of these experiences, to inspiration to explore possibilities for a more compassionate society.

Archaeology and palaeoanthropology have seen a surge in popularity in recent years, thanks to digital media and the globalisation of knowledge. Within this realm, bioarchaeological studies revealing evidence of caregiving have garnered significant media attention and public interest, signalling a strong desire to learn more. This, in turn, fuels an eagerness for further studies. My contributions to research and outreach in this field employ different vehicles - a blog (<https://nutcrackerman.com/>), a book (*Evolución Humana: Prehistoria y Origen de la Compasión*) specifically written for a lay audience, public lectures in scientific and social forums, and participation in television and radio interviews and podcasts - and I briefly discuss the impact of these in terms of raised awareness and appetite for further information. I will also describe the development, aims and operation of the recently-established 'care and compassion' research network.

4 INFECTIOUS DISEASE SPILLOVERS: A ONE PALEOPATHOLOGY PERSPECTIVE

Abstract author(s): Buikstra, Jane (Arizona State University) - Uhl, Elizabeth (University of Georgia)

Abstract format: Oral

If we consider the history of human disease in relationship to animal domestication, we find a strong relationship - with dogs and humans, for example, having the greatest number of shared zoonotic diseases. Recent pandemics have

underscored cross-species disease transmission between humans and both domesticated (swine, chickens) and wild animals (bats). By raising sensitivity to such spillovers and the process of disease transmission, past and present, we encourage healthful interactions important in animal conservation efforts and public health measures. We believe that a ONE Paleopathology approach, adopted from the ONE Health model, encourages this broad perspective.

ONE Paleopathology, like its biomedical analogues, combines human medical science/human paleopathology with veterinary science/animal paleopathology. This merger is essential for comprehensive analyses of the interconnected environmental factors and evolution-based susceptibilities that determine health and disease across species and time. Engaging all aspects of health, including animals and their environments, ONE Paleopathology addresses significant worldwide issues, past and present. We initially review the histories of ONE Medicine and ONE Health, as these anchor ONE Paleopathology. We then illustrate how, by using a ONE Paleopathology approach, biomedical advances in imaging and genomics mesh naturally with traditional observations of contexts and morphological

observations of remains. Such methodologically sophisticated developments encourage investigations of disease, past and present, to extend beyond morphological assessments. However, to take full advantage of the remarkable new opportunities, an integrated, problem oriented approach is required. The identification of significant questions should receive primary emphasis, rather than techniques. As illustrated by its application to *Burkholderia* spp, morbilliviruses, and *Mycobacterium* spp, a One Paleopathology approach uses evolutionary contexts to integrate the perspectives provided by multidisciplinary knowledge bases. It thus provides the global and technologically sophisticated viewpoint required to truly understand the complex histories of diseases and can inform both future research and clinical applications.

5 USING BIOARCHAEOLOGICAL DATA TO INFORM DIAGNOSTIC CRITERIA FOR ACQUIRED SYPHILIS IN CLINICAL CARE AND PUBLIC HEALTH THROUGH TRANSLATIONAL SCIENCE

Abstract author(s): Zuckerman, Molly (Mississippi State University) - DeWitte, Sharon (Department of Anthropology, University of South Carolina) - Crespo, Fabian (Department of Anthropology, University of Louisville) - Widrick, Kerri (Department of Anthropology and Middle Eastern Cultures, Mississippi State University) - DeGaglia, Cassandra (Department of Anthropology, Tulane University) - Nichols, Lauren (Department of Anthropology and Middle Eastern Cultures, Mississippi State University) - Umar, Muneebah (Department of Biological Sciences, Mississippi State University) - Wissler, Amanda (Department of Anthropology, University of South Carolina) - Reynolds, Aleisha (Department of Anthropology and Middle Eastern Cultures, Mississippi State University)

Abstract format: Oral

Due to a diverse set of limitations, ranging from difficulties with culturing the causal bacterium (*T. p. pallidum*) to incomplete animal models, less is known about the pathogenesis of acquired syphilis than most equivalently common pathogens. Among the most bioarchaeologically, clinically, and epidemiologically germane of these pertains to syphilis' outcomes: which host characteristics are associated with resolution after early-stage infection, which carries little mortality and morbidity risk, vs. persistence into late-stage infection, which causes significant morbidity and continued transmission (e.g., congenital syphilis)? To circumvent some of these limitations, we assess heterogeneity in frailty to late-stage syphilis relative to evidence of chronic or episodic stress responses over the life course, age, nutritional status, and comorbidity in adult skeletons (N=128) representing individuals with antemortem diagnoses of syphilis in historically documented 19th to early-20th documented US collections. We employ methods—the Skeletal Frailty Index (SFI) and the Combined-Age Charlson Comorbidities Index (CA-CCI)—that will enable empirical translation of our bioarchaeological findings, which are currently preliminary, into public health and medical indices. Through working with experts in translational science, clinical medicine, and epidemiology, these can be used to refine guidelines for screening and diagnosis of syphilis cases with the goal of more accurately identifying patient/ host characteristics likely associated with persistent infection. Rapid increases in syphilis' global incidence, especially congenital syphilis, which are exacerbated by persistent diagnostic difficulties, make these findings critical. This project can therefore fill a crucial gap in understanding of syphilis's disease ecology in ways that can benefit the living.

This research was supported by the National Science Foundation, Award No. 1946203.

6 INDUSTRIALISATION AND THE CHANGING HEALTH OF LONDONERS, A BIG QUESTION AND LARGE DATA SETS

Abstract author(s): Bekvalac, Jelena (Centre for Human Bioarchaeology, Museum of London)

Abstract format: Oral

The period of The Industrial Revolution was a transformative time in history and as a country Britain was seen to take the lead in the profound changes wrought by the processes of industrialisation. As a city, London was at the epicentre of the industrial era and from historical sources the socio-economic effects of such enormous change had marked and often unparalleled consequences upon the lives and health of the populace.

The Impact of Industrialisation on London Health project funded by the Rosemary Green Grant awarded through the City of London Archaeological Trust (CoLAT) was a multidisciplinary archaeology research project to investigate the legacy of industrialisation on London health patterns and notably contextualised with health topics including obesity, cancer, air pollution and ageing all relevant for people today.

Key to the formulation of such a project was retention and access to skeletal collections (notably post medieval), accessible standardised osteological data & digital osteological data (primarily the extensive Museum of London collections) and access to the application of a portable digital radiography kit.

Crucial to the project was the large skeletal data set of 2,241 adult individuals (comprising only of adults possible to have an age & sex estimate) from archaeological excavations of the pre-industrial (medieval) and industrial (post medieval) period from London and Non-metropolitan locations. The large primary sample size was important when dividing in to pre-industrial and industrial cohorts of young, middle and old age males and females for comparative analysis.

Synthesis of the bioarchaeological data sets in conjunction with research of historical documentary sources and modern public health data revealed interesting health trends and patterns from the past to the present. Ultimately highlighting that the impact to health from industrialisation was not a uniform process and the influence it has continues on people's lives and health today.

7 APPLIED APPROACHES TO INDIGENOUS-CENTRIC AND INDIGENOUS-LED BIOARCHAEOLOGY: WITH A FOCUS ON THE STUDY OF VIOLENCE AND SOCIAL INEQUALITY

Abstract author(s): Harrod, Ryan (University of Alaska Anchorage) - Johnson, Norma (Chickaloon Village Traditional Council) - Schenkenberger, Kaelyn Nutuknginoun (University of Alaska Anchorage)

Abstract format: Oral

Bioarchaeological analysis of markers of traumatic injuries, indicators of stress, and the presence of pathological conditions on human skeletal remains, as a means of identifying evidence of violence and social inequality in the past, has exploded over the last few decades. Recent calls for reassessing best practices in bioarchaeology however, argue that researchers should not only establish collaborations with Indigenous communities, but ensure that projects are driven and serve the interests of these stakeholder groups. Our paper will explore how prior research focused on identifying violence and social inequality among Indigenous groups has not adequately included the voices of the descendant communities and how new approaches can provide a more holistic picture of past conflict and disparity. While we are highlighting research on human skeletal remains associated with Indigenous groups in Alaska, we argue that these best practices are relevant considerations for bioarchaeological research in Europe with a focus on Arctic populations, including the Inuit and Saami.

8 THE SOUTHERN CEMETERIES ARCHAEOLOGY PROJECT - BRINGING TO LIGHT THE LIVES OF THE MARGINALISED THROUGH COMMUNITY-LED BIOARCHAEOLOGICAL RESEARCH

Abstract author(s): King, Charlotte - Buckley, Hallie (University of Otago) - Petchey, Peter (Southern Archaeology Ltd.) - Snoddy, Anne Marie (University of Otago)

Abstract format: Oral

Unmarked graves are a common feature of colonial cemeteries in New Zealand. In general these unmarked graves represent those who were marginalised in life (e.g. ethnic minorities, the poor), a lack of permanent marking on their graves ensuring they remain marginalised in death. The Southern Cemeteries Archaeology Project is a community-driven, research-led project that aims to redress this balance.

In this talk we focus on our work with the Chinese community in Otago (New Zealand). Many of this community are descendants of the Chinese goldminers who came to Otago with the colonial goldrushes, and whose burials remain unmarked. For the Chinese community this has serious spiritual implications. Using one individual as an example we will show how multi-disciplinary bioarchaeological techniques have enabled the reconstruction of the life stories of these people. By combining research techniques with community concerns we have been able to give the dead back their voices, allowing the people of the present to learn from their stories.

9 COMMUNITY ARCHAEOLOGY AS ACTIVISM: TWO HISTORIC CASE STUDIES

Abstract author(s): McCrane, Samantha (University of Florida, C.A. Pound Human Identification Laboratory; Metropolitan State University of Denver, Human Identification Laboratory)

Abstract format: Oral

There is currently extensive debate in the field of anthropology regarding the development of best practices for ethically excavating, curating, and/or studying human skeletal remains. One prominent concern is how to overcome public mistrust of bioarchaeologists by historically disenfranchised groups stemming from past violations, such as failure

to obtain consent for excavations and analysis or to repatriate remains readily. Direct community engagement is key in rebuilding trust with these groups, and expanding and maintaining inclusivity in the field. Community archaeology excavations provide a means to do this. In this type of excavation, community members are consulted on how they want skeletal remains handled and actively participate in an oversight role in all stages of the excavation. Giving agency to community members helps to bridge the gap between scientists and the public. This practice is mutually beneficial as it helps to build diversity within the discipline and helps to empower descendant communities, which is incredibly meaningful for all parties involved. Furthermore, engaging in community archaeology is a form of social activism in itself, setting a precedent that we are actively working to mold a more equitable and inclusive society.

In this presentation I review two recent, high-profile community archaeology excavations in different regions of the United States: the Tulsa Race Massacre victim burial site in Tulsa, Oklahoma and the Sisters of Loretto exhumation and relocation in Denver, Colorado. I discuss the strengths and weaknesses of the organizational models employed in each excavation and the benefits to the community and archaeologists. Additionally, I examine how diversity and intersectionality among the excavation team members helped to address ongoing sociopolitical issues and furthered the human rights missions of the respective excavations.

10 **MARCHING FORWARD TOGETHER: TOWARDS THE DIVERSIFICATION AND DECOLONISATION OF BIOARCHAEOLOGY IN CALIFORNIA**

Abstract author(s): Tapia, Ihuixaya (California State University, Monterey Bay) - Arellano, Monica (Muwekma Ohlone Tribe of the San Francisco Bay Area)

Abstract format: Oral

The relationship between the field of archaeology and Native Americans has historically been associated with colonial endeavours. Indigenous erasure has been a prevalent theme in the development of the United States and the field of archaeology has played a significant role in that colonial imperative. This report first highlights archaeology's complicity in the damage that has been caused against Native Americans, with a focus on California Native Americans, and how it has aided in their loss of sovereignty, left them without control of their own identities, and helped construct colonial spaces. It suggests a shift in methodologies so that Native Americans can once again be the rightful owners and stewards of their past via the integration of Indigenous/collaborative archaeology which encourages indigenous interpretation, participation and gives Native American Nations full control of their cultural resources, history, and heritage.

This paper focuses on a skeletal assemblage of 27 ancestral individuals of the Muwekma Ohlone Tribe of the San Francisco Bay Area, from CA-SCL-215- Yákmuy 'Ooyákma-tka, Place of the East Ridge Site. Collaborative archaeology was emphasized throughout the entire project, with the Muwekma Ohlone tribal representatives playing an active and continuous role, from planning and excavation to the analysis of the assemblage. Skeletal analysis was conducted on all individuals prioritizing methodologies that were developed specifically for Native American assemblages, that were developed using Native American assemblages, and/or included Native American individuals as a part of their datasets in order to procure the most accurate results. Cross comparisons with nearby Muwekma Ohlone ancestral heritage sites were included in an effort to elaborate on the comprehension of analysis results. A specific emphasis was given to the subject of diversification and decolonisation of bioarchaeology in the state of California with an underlying goal of tribal revitalization and a push towards a more inclusive collaborative archaeology.

11 **FREE FOR ALL: EXPLORING THE SCOPE FOR A NON-SPECIALIST, USER-FRIENDLY INDEX OF CARE**

Abstract author(s): Tilley, Lorna (Independent Researcher) - Tapia, Ihuixaya (California State University, Monterey Bay) - Caine, Alyson (University of California, Merced) - Canzonieri, Christopher (Basin Research Associates, San Leandro, California)

Abstract format: Oral

Released in 2014, the Index of Care (<http://www.indexofcare.org/>) is a free, cloud-based instrument supporting bioarchaeology of care analysis by providing a framework for (i) interpreting evidence in human remains suggesting experience of disability and receipt of care, and (ii) exploring the implications of this care for insights into past social relations, social organisation and individual identity. In theory available to anyone with internet access, in reality the Index is designed for professional bioarchaeologists, and non-specialists are likely to find it difficult to use. Yet there are many non-archaeologists interested in investigating care-related behaviours in the past, and their active participation in studies may offer new perspectives on what care comprised, the motivations for caregiving, and the wider significance of care provision. This is particularly so when bioarchaeology of care research is undertaken in traditional communities characterised by strong connections between ancestors and their modern descendants. In such cases, not only will stakeholder involvement enrich research outcomes, but may also help to bring about increased control and ownership of the research process by those most immediately impacted by its results.

In response to these observations, a project to ascertain the desirability and feasibility of designing a more user-friendly version of the Index of Care - one aimed at facilitating non-specialist research involvement - is being initiated. In consultation with stakeholder groups we seek to ascertain whether the Index, in principle, is perceived as a potentially useful tool by non-archaeologists; which stakeholders might choose to use the Index, for what purpose(s) and in what context(s); whether a new, more user-friendly version is actually required, or whether changes to the existing Index might suffice; what this user-friendly Index might look like; and whether one version - however friendly - can satisfy the requirements of diverse stakeholder groups. This presentation reports on our progress.

12 CARE, THE GREAT HUMAN TRADITION: A COLLABORATIVE EXPLORATION OF CARE ACROSS TIME AND CULTURE

Abstract author(s): O'Dwyer, Siobhan (University of Birmingham) - Teuten, Maggie (Carer) - McKenzie, Catriona (University of Exeter)

Abstract format: Oral

This presentation provides an overview of an interdisciplinary collaboration which brought together archaeologists, historians, anthropologists, social care researchers, charities, and community arts organisations to co-create a proposal for research exploring cultures of care. Central to the project from the outset, was the active participation of contemporary carers, and organisations that work with carers, to ensure the proposed research was both informed by, and beneficial to, those with lived experience of care. The project culminated in a public consultation which provided an opportunity for a diverse range of carers across the South-West of England to respond to the research ideas. Inspired by this engaged research, Devon artist Leo Jamelli was commissioned to produce a new work, *Invisible Carer*, a large-scale animated light installation that was projected onto the ruins of the St Catherine's almshouse in Exeter. This presentation will consider how collaborative approaches to research might allow archaeological evidence to inform contemporary debates and how the arts can be used to create safe, accessible spaces for the wider community to connect with bioarchaeology.

13 'HOW I FEEL': EXPLORING THE LIVES OF ENSLAVED PEOPLES THROUGH LITERATURE, BIOARCHAEOLOGY AND CREATIVE WRITING

Abstract author(s): McKenzie, Catriona (University of Exeter)

Abstract format: Oral

This presentation offers an account of an interdisciplinary research project *Literary Archaeology: Exploring the Lived Environment of the Slave* which brought together a literary scholar, two archaeological scientists and seven creative writers to explore what it was like to be enslaved. The research examined the relationship between bioarchaeological and literary approaches to slavery, and investigated how the methods and priorities of each discipline might inform each other in understanding what it was like to be enslaved. Inspired by published archaeological evidence about the lives of enslaved individuals, creative writers from the Black British writers group *Our Stories Make Waves* developed new contemporary works that were read and performed in the intimate setting of the Georgian House Museum in Bristol - the former home of sugar merchant and slave owner, John Pinney. This presentation will outline some of the challenges of interdisciplinary working and will explore the legacy of this project.

14 EXPERIMENTAL NARRATIVES: BIOARCHAEOLOGY AND FILMMAKING IN PRACTICE

Abstract author(s): Charles, B (Logan Simpson) - McDaniel, Kym (University of Utah)

Abstract format: Oral

There are many paths to better understanding the human condition. Bioarchaeology interacts with the dead, endeavoring to understand the biocultural impacts of a social life upon the bodies of individuals and populations in the past. This can lead to rigorous and detailed data that is useful to those within the field but few outside of it. Interdisciplinary approaches, including collaboration with artists, broaden our interpretations beyond what can definitively be discerned from data and additionally broaden our reach to diverse audiences. Visual arts, specifically filmmaking in the case for this paper, encourages engagement beyond comprehension of a subject, inviting the audience to internalize and be affected by it. Further, film festivals and public screenings supports the distribution of research to a public who may not have exposure or interest to archaeology within their everyday lives. As a scientific discipline, archaeology often limits investigations to questions that the archaeological record can definitively address. In contrast, experimental filmmaking often balances critical inquiry with open-ended engagement, an invitation for the audience to become curious about knowledge unknown. A collaboration between the bioarchaeologist and experimental filmmaker presents unique challenges. The potential resistance of the scientist to accept the often deeply personal and abstract nature of experimental filmmaking intersects with the learning process of the filmmaker to understand bioarchaeological ethics,

scientific process, and record. Yet, within this collaboration provides a unique opportunity to articulate the social relevance of the past and relate anthropological archaeology to the human condition today.

15 **MADNESS IN MISSISSIPPI: WEAVING NARRATIVES THROUGH BIOARCHAEOLOGY AND ORAL HISTORY AT ASYLUM HILL CEMETERY**

Abstract author(s): Mack, Jennifer (University of Mississippi Medical Center)

Abstract format: Oral

Founded in 1855, the Mississippi State Lunatic Asylum saw 30,000 patients pass through its doors before the institution moved to a new facility in 1935. Vital expansion of the University of Mississippi Medical Center (UMMC), now located on the former asylum property, prompted historical and archaeological investigations of the now-unmarked Asylum Hill Cemetery, which holds the graves of 4,000 – 7,000 individuals who died as patients. Hoping to spur conversations about mental illness treatment and perceptions in modern America, UMMC partnered with the Mississippi Museum of Art to support an artist's installation created by the descendant of one of the asylum patients. Programming presented alongside the show will be provided by members of UMMC's Asylum Hill Research Consortium. As weaving was one of the options offered to asylum patients for occupational therapy, the gallery will include a participatory weaving activity that allows museum visitors to work with different threads representing various psychiatric diagnoses and patient populations. Additionally, display panels will bring together osteobiographies, oral histories, and details from patient records to examine the asylum's successes and failures, and to facilitate discussions of how American society can improve attitudes towards and treatment of mental illness.

16 **LIVES AND EMOTIONS OF SKELETONS: AN INTERDISCIPLINARY APPROACH DIFFERENT BODIED HUMAN REMAINS IN MEDIEVAL ICELAND**

Abstract author(s): Haraldsson, Haraldur (University of Iceland)

Abstract format: Oral

Humans are complex creatures that change and evolve throughout their lives. From an infant to adolescence, from an adult to an elder. A spouse, farmer or priest, our status or roles as individuals within groups changes throughout and within time. Being social animals, humans affect and are affected by other humans. Giving aid, care and security, or setting restrictions, cultural expectations or stigma, are just a few examples of how humans can affect each other. These effects can produce myriad emotional responses and societal attitudes towards certain people, which can be difficult to ascertain from skeletal materials alone.

This paper will examine how the subjects of disability, care and emotions can be discussed academically through interdisciplinary research, with collaboration between fields such as archaeology, history, medieval literature and disability studies. A study will be presented of a different-bodied person, whose remains date to before 1104 AD, and was excavated in Iceland. This case can illustrate how bioarchaeology can serve as a foundation, with concepts such as lived or embodied experiences, for constructing a plausible holistic account of a person's life story by utilizing elements and data from various other academic spheres. This process is complex and must be conducted with rigorous research, understanding and ethical considerations, both for past and modern peoples. However, even though the outcome of the research can produce a mosaic of data, these results can be presented in an easily accessible text that both non- and professionals can understand and relate to. One such method is the fictive osteobiographical narrative, which takes all the gathered data and observations and presents the findings in a story narrative. This method can also be applied to address topics such as emotions within archaeological contexts.

17 **CULTURAL RESOURCE MANAGEMENT AND APPLIED BIOARCHAEOLOGY IN NEW YORK CITY**

Abstract author(s): Lans, Aja (Harvard University)

Abstract format: Oral

The Dutch trading post of New Amsterdam was founded on the southern tip of the island of Manhattan in 1624, on land stolen from the indigenous Lenape. From the outset, colonization transformed local ecosystems and altered the landscape. The colony, later conquered by the British and renamed New York, consistently lacked space to expand, so more land was built along the shorelines of the island by using landfill. Today the city grapples with its literal foundations, as human driven climate change and rising sea levels put many areas at risk while land is priced at a premium. Contending with these issues and attempting to make space for the living inevitably disturbs historic sites and the resting places of the dead across the city. Here, I consider how I use work as an applied bioarchaeologist in the cultural resource management sector to mitigate harm and to account for the needs of both the living and the dead across this complicated landscape. My work has implications for bioarchaeologists conducting applied research in dense urban landscapes, as well as historical archaeologists confronted with issues around repatriation, colonialism, and community engaged practice.

18 FIGHTING FIRE WITH FIRE? BIOARCHAEOLOGY AND TAPHONOMY AS TOOLS TO UNDERSTAND AND MITIGATE THE ONLINE HUMAN REMAINS TRADE

Abstract author(s): Huffer, Damien (University of Queensland) - Graham, Shawn (Carleton University)

Abstract format: Oral

Among the myriad present-day challenges that bioarchaeological research can aid activism and advocacy about, the on and off-line trafficking of human remains of known or unknown provenience and often-fabricated provenance has only recently begun to receive attention by the media, law enforcement or the public. Our collaborative research over the last several years has contributed foundational knowledge about the size and scope of networks across e-commerce and social media platforms, but it is clear that the amount of human remains surfacing and circulating online far outpaces seizures made by law enforcement or the prosecution of offenders. Here, we discuss the reasoning, logistics, ethics, and potential of a mobile application to classify taphonomic indicators of primary or secondary depositional environment of human remains seized from the market, as well as images of human remains for sale online. Since this project is still in the pilot-level development stage, this talk will focus on contextualising the idea and illustrating how and where such a tool could be useful for law enforcement, museum curators that sometimes have human remains offered to them, and First Nations and other descendent communities with a vested interest in stopping the trafficking of their Ancestral remains (or misappropriation of their cultural heritage) before the remains even enter the market.

19 DIGITAL TWINS IN BIOARCHAEOLOGY: APPLICATIONS IN EDUCATION, OUTREACH, PUBLIC ENGAGEMENT, AND CONSERVATION

Abstract author(s): Fry, Megan (University of Florida)

Abstract format: Oral

Digital Twins, broadly speaking, is a digital representation of a real-world object or system that is used for simulations or maintenance. It goes beyond 3D modelling by continuously incorporating information and adjusting the model accordingly. Although primarily applied within the manufacturing and engineering sectors, the framework is easily translated to bioarchaeological contexts. The field of bioarchaeology would greatly benefit from applying Digital Twin theoretical concepts in assessing the needs of descendant communities, and the physical preservation of cemetery sites.

Taking a broad approach to Digital Twins, we use Newnansville African American Cemetery as a case study. It is a segregated cemetery which houses individuals from slavery-era Florida to present day. There is a distinct lack of records for the site, leaving many unanswered questions. Recent survey work has demonstrated a significant portion of the cemetery houses burials which are unmarked, previously unknown to the community. Working with descendant communities and stakeholders, we have created a digital landscape of this historic cemetery, including a 3D model of the site. Drawing on the Digital Twins framework, we have incorporated a means for the community at large to contribute to the project through the online platform by providing their own photographs, stories, or records of the ancestral community in hopes of identifying some of the unmarked graves. By continually gaining feedback/input from the public, we permit stakeholders and the descendant community to steer the direction our heritage work takes. We also discuss the limitations of Digital Twins in bioarchaeology and posit potential means to combat these restraints. Using Digital Twins to incorporate oral histories, historic records and photographs, ethnographic accounts, and cemetery records alongside our digitized cemetery, we can benefit descendant communities as well as researchers. This project shows great potential in the education, outreach, public engagement, and conservation spheres.

370 REFLECTING ON DIGITAL PRACTICE IN HERITAGE NARRATIVES

Session theme: 3. Heritage Narratives and Representations

Session organisers: Kasten, Megan (University of Glasgow) - Pantos, Alexis - Kimball, Justin (Museum of Cultural History, University of Oslo) - Dempsey, Gary (Atlantic Technological University – Galway City)

Session format: Regular session

This session calls on digital imaging specialists to reflect on their own practice, workflows, and methodologies. Colleen Morgan (2022) has argued that digital archaeology is situated in practice-based research, defined by Candy et al. as a “principled approach to research by means of practice in which the research and the practice operate as interdependent and complementary processes leading to new and original forms of knowledge” (2021, p. 2). It is argued here that digital imaging processes exemplify practice-based research. While 3D models, RTI files, and other end-products of digital approaches are acknowledged as important tools to gain new insights into artefacts, monuments, and sites, this is only one dimension of the knowledge gained through these acts of heritage digitization. In an age of increasing automation across all stages of digitization and presentation, it is easy to overlook the decisions made by digital prac-

titioners behind-the-scenes at different stages. While standardised work routines and descriptive documentation (i.e. paradata) can preserve some practical steps, it is hard to argue that they sufficiently communicate the situational, personal, and communal knowledge generated in these key moments.

This session welcomes papers that reflect on the act of digitization, whether capturing, processing, modelling, disseminating, archiving, or collaborating with a range of communities in the production of scientific or artistic outputs.

- Candy, L., Edmonds, E., Vear, C., 2021. Introduction. In *The Routledge International Handbook of Practice-Based Research* (1st ed.). eds C Vear, L Candy, E Edmonds. Routledge.
- Morgan, C. 2022. Current Digital Archaeology. *Annual Review of Anthropology* 51(1): p.213–231. <https://doi.org/10.1146/annurev-anthro-041320-114101>

ABSTRACTS

1 DIGITAL EXCAVATION: AN ARCHAEOLOGIST'S EXPERIENCES WITH DIGITALLY 'EXCAVATING' CT-SCANNED SOIL BLOCKS FROM THE GJELLESTAD SHIP

Abstract author(s): Kimball, Justin (Museum of Cultural History University of Oslo)

Abstract format: Oral

The Gjeljestad ship is the first Viking Age ship to have been excavated in Norway since 1904. After preliminary investigations, it was determined that the ship was in a poor state of preservation—with heavily corroded rivets being one of the most easily recognisable and valuable artefacts still readily discernible. The remnants of the rivets were incredibly delicate, and traditional excavation of these would have resulted in a loss of integrity for the objects, thereby potentially resulting in a loss of information. To mitigate this, each rivet was systematically georeferenced and removed as part of a soil block which would then be scanned with a CT-scanner. As each soil block was georeferenced, we have been able to reconstruct the exact position of each rivet as it was in situ at the site. The volumetric data resulting from the CT-scans is currently being investigated, and the act of working with CT-data can be described as like the act of physical excavation—only digitally.

Thus, this paper endeavours to explore the act of 'digitally' excavating archaeological material. It focuses chiefly on the rivets and how the CT-data can be used to reconstruct the Gjeljestad ship, piece by piece, as it was at the time of the archaeological investigations. A brief examination of the values and drawbacks that this type of CT-scanning has for archaeology will then be given, followed by a discussion about how this methodology might impact how we disseminate archaeological knowledge to both scientific and public spheres.

2 MEASURE ONCE, CUT TWICE - DEVELOPING AN EFFECTIVE PIPELINE FOR 3D DIGITAL DOCUMENTATION IN THE CULTURAL HERITAGE SECTOR

Abstract author(s): Corns, Anthony - Shaw, Robert (The Discovery Programme)

Abstract format: Oral

The phrase “measure twice, cut once” is commonly used in industries including construction and tailoring, and is meant to emphasise the importance of accurately measuring a material before cutting it to prevent wasting it or having to redo the cut.

In contrast, the 3D digital documentation of archaeological objects and structures often flips this statement on its head. Access to sites and artefacts can often be restricted and inadequate resources in the heritage sector can limit the number of sites recorded to a high standard. Therefore, maximising value from such opportunities is vitally important. Applying divergent modelling and visualisation processes to a single data capture event to generate a range of outputs tailored to diverse audiences is our objective.

This paper explores the work practices developed by the Discovery Programme over the last 20 years, digitally documenting many of Ireland's iconic archaeological and historical sites and objects and delivering a range of outputs to a broad audience. Through experience gained across a range of sites and projects a nuanced and holistic understanding of 3D and its applications in cultural heritage has led to the development of a practise-based pipeline which modularises activities. The processes of data capture, modelling, texturing, lighting, rendering and presentation deliverables are discussed, and the critical decisions in each pipeline process explored. It will show how ultimately an appreciation of final data destination and end user requirement informs the how the pipeline is applied.

The paper will use examples from a range of archaeological and historical structures, monuments, and objects to explain the decisions which informed the choice of capture technology, software and output mechanisms to deliver an effective product to a range of users.

3 TRUST THE PROCESS. THE CREATION OF A NEW DOCUMENTATION WORKFLOW FOR PALAEOOLITHIC SITES: INSIGHTS FROM PEÑA CAPÓN (SPAIN)

Abstract author(s): Jiménez-Gisbert, Guillermo - Navajo-Samaniego, Esther (University of Alcalá) - Vázquez-Martínez, Alia (University of Alcalá; University of Santiago de Compostela) - Luque, Luis - Castillo-Jiménez, Samuel - Alcolea-González, Javier - Alcaraz-Castaño, Manuel (University of Alcalá)

Abstract format: Oral

The accurate recording of excavation floors, rock art or field survey areas are essential tasks in archaeological science. The search for new technologies and methods to gain both accuracy and speed in the field workflow has been a focus of recent research. In the MULTIPALEOIBERIA Project we use a Trimble SX-10 device to accurately document the excavation and survey processes and to create georeferenced 3D models of the rock art panels and sites. In this paper we focus on the archaeological documentation of the Peña Capón site (central Spain), a rock shelter hosting a sequence of Upper Palaeolithic human occupations. This site is submerged in a water reservoir for the most part of the year, emerging only during dry years, just for about 50-60 days at the most (usually less), at the end of autumn. In such a short time frame, and considering the large number of lithic and faunal remains found in the archaeological layers, speed is key and every step in the fieldwork must be polished to get the most out of it.

To that end, we aimed at scanning each of the excavation layers as a whole, instead of recording each find individually, as it is commonplace in Palaeolithic sites. What was originally intended to be a simple addition of the laser scanner component to the total station workflow resulted in the creation of a completely new method to optimise the data collection process.

To assess the outcomes and efficiency of this new workflow we conducted an experiment that recreates field conditions and provides quantitative values on the validation of this method. Here we present the results of this experiment and show how our documentation workflow has been improved. The larger the number of remains to be recorded, the larger the time that is saved.

4 LEXICON OF KATYN ARCHAEOLOGY. CHALLENGES OF DIGITIZATION OF ARCHAEOLOGICAL SOURCES AND ARCHIVAL DATA ON THE ARCHAEOLOGY OF WAR CRIME

Abstract author(s): Majorek, Magdalena (University of Lodz; Institute of Archaeology; Laboratory of Dating and Conservation of Artifact) - Ławrynowicz, Olgierd (University of Lodz; Institute of Archaeology) - Zalewska, Anna (University of Lodz; Institute of Archaeology)

Abstract format: Oral

The aim of the research project “Lexicon of Katyn Archaeology (1990-2015)” is to collect, systematise, archive and make public information on to date Polish archaeological research on traces of the Katyn Massacre. A multidisciplinary team interprets the existing knowledge obtained by archaeologists as a result of the research carried out so far at the “Katyn sites”, collects new hitherto unarchived data (archaeological and anthropological) and makes the entire resource available in public spaces. The assumption is that the culmination of the team’s work will be: (1) elaboration of the “Lexicon of Katyn Archaeology” and (2) an open (textual and multimedia) E-repository, which will be available through the Katyn Museum and the University of Łódź, as well as (3) creation of the Project Archive.

In the first year of the project, within the framework of one of the twelve tasks, we have used the wide selection of methods and tools for the documentation, visualisation and archiving of particular groups of source materials (documents, photographs, grave artefacts). The challenge was both the choice of the criteria for the selection of objects and the scanning itself, including 3D scanning of items from the death graves undertaken using archaeological methods. These are objects with different raw material structures, textures, colours, shapes, workmanship and decoration techniques - in various states of preservation. In this presentation, we will discuss the strengths and weaknesses of using particular methods in documenting different types of data and records, and share lessons learned, including methodological and interpretative failures and successes experienced in the course of capturing images of the not-so-distant difficult past.

5 VALUES-LED PARTICIPATORY PRACTICES IN DIGITAL HERITAGE: A COMMUNITY-LED APPROACH TO TECHNOLOGICAL INTERVENTIONS IN THE CONTEXT OF NATURAL DISASTERS

Abstract author(s): Dolcetti, Francesca - Baraldo, Matteo - Di Giuseppantonio Di Franco, Paola (University of Essex)

Abstract format: Oral

While the usefulness of 3D technologies in recovering, reconstructing and replicating the tangible components of lost or damaged heritage is well-established, less explored is their potential in capturing the intangible aspect of sense of place, defined by the values and significance that communities attach to their lost home and cultural heritage. To

address this gap, this paper proposes a values-led participatory design framework that shifts the focus from an outcome-oriented application of 3D technologies to a more ethically-aware human-centred approach to the design of technological interventions, foregrounding community needs, values and sustainability.

The work presented in this paper is part of a UKRI Future Leaders Fellowship titled REPLACE (Rebuilding a Sense of Place), which aims to study the role and impact of 3D technologies (e.g. Augmented Reality, Virtual Reality, 3D printing, Mixed Reality) in supporting communities and heritage resilience after natural disasters. REPLACE proposes an ethnographic, evidence-based and community-centred longitudinal study that focuses on community resilience: a techno-ethnography. The proposed framework of REPLACE is based on an iterative process including ethnography, digital data collection, digital experience, data analysis and processing. Video-ethnographic interviews will inform the development of 3D technological interventions based on how communities conceptualise heritage sense of place during all phases of the Hazard Management Cycle. By understanding how communities engage with and respond to the co-created technological interventions we will be able to transform the way we can use 3D technologies to rebuild heritage and sense of place after natural catastrophes.

This paper discusses the preliminary results of the application of a values-led participatory design framework from the outset of REPLACE, aimed at creating the values and ethical framework underpinning the project's digital practice.

6 GRAVE CLOUDS; DIGITAL WORKFLOWS FOR UNMARKED GRAVE RECOGNITION IN IRISH HISTORIC GRAVEYARDS

Abstract author(s): Tierney, John (Eachtra; Historic Graves Project; Incultum)

Abstract format: Oral

The Historic Graves project, a citizen science digital heritage project, is over ten years old and in that time over 500 rural Irish community groups have surveyed and published digital surveys to the web platform www.historicgaves.com. The basic survey record is created by geolocated survey photographs and a simple survey system, based on archaeological principles is taught to community volunteers.

In the last three years our focus has switched from simple mortuary monument surveys to assessing techniques for unmarked grave identification and recording, aiming for more complete archaeological surveys. Ground modelling from measured drone surveys and LIDAR surveys have been the main tools we've tested.

In this talk we will present our ongoing research focusing particularly on drone SFM (with Dr Paul Naessens) and LIDAR (with Dr Steve Davis) surveys, including handheld LIDAR surveys, for the purpose of understanding 19th and 20th century burial practices.

A twofold typology of graves developed in Ireland based on 19th century legislation with a strong differentiation between earth-cut and walled graves. Earth-cut graves, in particular, have a wider variety of shapes and sizes especially in 'mass'/common burial contexts. Examples relating to the Great Famine burials of 1845-52 (institutional and non-institutional burials) are examined along with later burial practices (Mother and Baby Home burials, District Mental Hospitals and County Homes are considered) in terms of their archaeological identification.

The work was part-funded by a 2021 RIA Research grant and is currently funded by the Horizon 2020 EU Incultum project.

7 OPAQUE METHODS FOR AUTHENTIC RESULTS: MAKING DIGITAL HERITAGE USEFUL FOR INDIGENOUS AUSTRALIA

Abstract author(s): Farrar, Calum (Griffith University)

Abstract format: Oral

When collaborating with Indigenous communities there is an emphasis on ensuring that the relationship is reciprocal. The researcher has access to the knowledge and lands of a community and in return the community receives the raw data and research output of the researcher. But is this as useful to the community as it is the researcher? This paper explores additional means of reciprocity through the creation of digital heritage assets, tools and experiences to fulfill the needs and desires of Indigenous communities in Queensland, Australia. In particular, it focuses on how existing methods of digital archaeological data creation can be leveraged to meet these desires. Furthermore, it discusses how this process can make archaeological methods, data and results more accessible and engaging to communities and the non-academic public more broadly. This is a critical area for archaeologists and heritage specialists to explore in greater detail, to both address existing inequality and prepare for the ever-growing quantity and complexity of digital heritage data.

8 COPYWRONG: AN ARGUMENT AGAINST LEGAL APPROACHES TO OWNERSHIP IN CULTURAL HERITAGE

Abstract author(s): Garrett, Zenobie (University of Limerick) - Wyatt, Kristi (University of Oklahoma)

Abstract format: Oral

The application of ownership in the realm of cultural heritage has become a central, and often contentious point of discussion. Tensions arise from the negotiation of not only multiple contemporary frameworks but also temporally distant frameworks of ownership as well. While prehistoric concepts of ownership can be particularly difficult to define, even modern ideas of ownership can prove irreconcilable with one another. Moreover, although concepts of ownership have been used in cultural heritage debates to validate claims of power and authority, the application of ownership ideas has been rightfully critiqued as a particularly Western method of establishing control.

The increasing ubiquity of 3D scanning in fields concerned with cultural heritage introduces new challenges to the already complicated issue of ownership. Copyright is often used to protect digital object rights because of their presumed creative and artistic nature. Despite the goals of copyright laws to protect creators, there are several issues with the application of these laws that range from the practical to the ethical. This paper will argue that despite the legal authority copyright grants, there are 8 issues that make the pursuit of copyright claims on 3D models problematic and often at odds with archaeology's obligation to recognize issues of power and authority by giving voice back to local communities.

9 PHOTOGRAMMETRY AS SLOW LOOKING IN THE ANALYSIS OF EARLY MEDIEVAL CARVED STONES

Abstract author(s): Kasten, Megan (University of Glasgow)

Abstract format: Oral

It is now well-established that the outputs of 3D recording techniques are useful tools that allow for a better understanding of early medieval carved stones. The resulting 3D models enable researchers to remove the colour/texture to better visualise the geometry of the carved surface, to create new, probable, or impossible lighting positions, and to allow side-by-side comparison of monuments in three dimensions. What is not often discussed is the data capture process, and when it is considered, the discourse is often focused on the automation of workflows and the comparative quickness and efficiency offered by different digital recording methods. However, there are insights to be gained by viewing photogrammetry through the lens of 'Slow Looking'. Visual analysis is a cornerstone of archaeology, but 'Slow Looking' is a specific method described by Shari Tishman as 'strategic...it involves the intentional use of observation strategies to guide and focus the eye'. In photogrammetric Slow Looking, the camera functions as a framing device; as the practitioner works, small areas on the surface of the monument are highlighted for further investigation before, during, and after processing. Blank, hidden, or damaged surfaces are given more attention through this method, as failing to capture these surfaces results in a less coherent 3D output. This paper will reflect on how Slow Looking has informed my practice-based research using photogrammetry and RTI to record and analyse the Govan stones in my PhD research and ogham-inscribed monuments for my current research in the OG(H)AM project. It concludes with a consideration of how Slow Looking generates knowledge for heritage narratives and how this creates opportunities for more focused 3D recording outreach activities.

10 REFLECTIVE IMAGERY AS A TOOL FOR COLLABORATION OF SCIENTIFIC AND ARTISTIC METHODS

Abstract author(s): Lengyel, Dominik (BTU Brandenburg University of Technology Cottbus-Senftenberg) - Toulouse, Catherine (Lengyel Toulouse Architects)

Abstract format: Oral

The moment at which new knowledge is generated in image production is when questions arise that have not arisen before. The questions arise when the image specialist attempts to create a model. Completeness is the crux of the matter. Often there is reluctance against seemingly insufficient data. For this the authors have developed a method with archaeologists and their uncertainty in knowledge that is accordingly called "visualisation of uncertainty", based on two traditional sub-disciplines of architecture: model building and photography. The combination allows the model as abstract as necessary to stay close to the archaeological hypothesis and to represent this abstract geometry as the architectural idea. It is the hypothetical intention that is depicted, not the speculative actual appearance. Both require design as in abstraction it is not enough to pull something away to free something that remains. On the contrary, it is necessary to design visual representations that are both expressive and undefined. In the projection archaeological arguments shall feel like built architecture through photographic composition, lighting and exposure. In each of these steps, the image, a scientific and an artistic result, influences the archaeologists. The visual translation causes immediate reflection and new questions. Since verbal hypotheses are questioned once translated into images, the authors

call this process visual reflection; like hand-drawings that fix formal thoughts and thereby reflects them. Only after an extensive iterative process of joint decisions is a state reached that satisfies both and complements the hypothesis with its visual counterpart. The method will be presented using prominent exhibited and published projects, amongst them the Hildebold Cathedral in Cologne, where contemporary documents overturned its appearance, and the amphitheatre in Dyrrachium, whose appearance resulted from the virtual photographs. In both cases, it was necessities from the point of view of architecture that raised the questions for archaeology.

11 USING CO-DESIGNED RESEARCH-ORIENTED VR TO EXPLORE „POST-EX“ INTERPRETATION AND NARRATIVE MAKING

Abstract author(s): Juckette, Cole (University of Glasgow)

Abstract format: Oral

The use of Virtual Reality in Archaeology has evolved through multiple eras of archaeological methods design, from its early use in “virtual archaeology” through the embodied intentions of “cyber archaeology” (Forte 2016, 277-285; Reilly 133-135, 1991). While it is an established technology, its applications are primarily in the creation of archaeological “products”, finished narrative interpretations that need to be transmitted. What is lacking is an understanding of ways archaeologists themselves might use VR as a digital method to explore their own data and assist or alter how they arrive at interpretations. This paper explores how VR can be constructed to re-orient the technology inward, exploring more reflexive approaches in archaeological image making and narrative construction. In doing so, it asks: How should it look and function?

This paper introduces two case studies in collaboration with projects in Italy, with materials dating from the Iron Age to the 4th century AD and early medieval period. Both have strong potential for incorporating VR into their workflows because of their adoption of digital recording methods. I used participatory design methods to assess the needs of the different teams as collectives. Each activity evaluated aspects of what a research-oriented system for VR might look like. The workshop method encouraged the use of collective imagination and synthesis among users to produce positive outcomes in terms of the team’s overall satisfaction with and assessment of the utility of final designs.

While there is much diversity in the desired functions archaeologists participating in this project expressed, the pilot study presented here revealed patterns of similarity. A few functions constitute the essential design elements for research-oriented VR and must be present to drive its function in a capacity that connects with current archaeological questions and leverages data in 3D to answer them.

12 EMERGENT PROCESS AND RESEARCH PRACTICE IN THE VIRTUAL REALITY GLOBAL LIBRARY PROJECT

Abstract author(s): Dodd, Lynn (University of Southern California) - Zonno, Sabina (University of Southern California; The Huntington Library)

Abstract format: Oral

The Virtual Reality Global Library (VRGL) template is a well-documented, shareable, Unity-based project that is operational as an immersive VR headset experience of 3D, interactive, real time reading of ancient books with parchment page simulation. A goal of the project is to enable galleries, libraries, archives, museums, and other collection holders to meet their dual, and often competing missions, of providing wide access and supporting preservation.

This presentation is a reflexive effort intended to enhance transparency for those who use this project to create virtual reality experiences of ancient manuscripts and a reminder to us of the benefits of doing this work personally. We offer two concrete examples of our digital archaeological work with manuscripts as practice-based research. We take seriously the concerns and potential of this in line Barad’s (2007:93) call for clarity about the constitutive exclusions that are enacted, and questions of accountability and responsibility for the reconfiguring of which we are a part. We discuss interjections of decision making, and hence of subjectivities, into gestural and procedural work of transforming 2D images into 3D parchment simulations. We show examples of de-aging and renewing parchment and its surface designed after playtesting with manuscript curators interested in prompting renewed awareness of the cost of use, of books being read and held as intended. This prompts deeper reflection by us on the nature of damage and the semantic range of that concept in ownership and the curatorial sphere. We discuss this process and engagement with the manuscript that requires a series of decisions, and yet agential cuts (Barad 2007) that are difficult to make transparent except in the aggregate. Still, in undertaking this work, we understand better the socio-material entanglements of use, of parchment naturally ageing and people touching, kissing, crying, and smearing, or reading the manuscript by candlelight.

SEEING IS BELIEVING: AN APPLICATION OF AR ON PALAEOLITHIC ROCK ART

Abstract author(s): Rivero, Olivia - García-Bustos, Miguel (Universidad de Salamanca) - Dólera, Antonio (Cinemedía and Heritage) - Ruiz-López, Juan Francisco (Universidad de Castilla-la-Mancha) - Garate, Diego (Universidad de Cantabria) - Lorente, Juan Carlos (Cinemedía and Heritage) - Eguilleor, Xabier (Universidad de Salamanca)

Abstract format: Oral

The current study of Paleolithic art produces a large amount of graphic information generated on sites with rock and portable art (tracings, photographs, three-dimensional reproductions) providing visibility to this fragile and unknown heritage, whose accessibility to the general public is often difficult or impossible.

In addition, most parts of the Palaeolithic art depictions are on many occasions challenging to observe, due to the very nature of the artistic entities (fine engravings in karst environments with poor lighting), and also due to conservation problems derived from both natural factors such as erosion and geological and biological alteration processes, as well as anthropic factors. These conditions make the Palaeolithic depictions nearly indistinguishable in many places today, except for experts.

This difficulty of accessing and visualising the Palaeolithic artistic heritage, located in fragile environments and on many occasions challenging places such as karst cavities, makes the information and knowledge generated by the investigation of this heritage asset difficult to transfer to society in general, which is frequently unaware of the incalculable value of this heritage. Therefore, our work proposes to generate various mechanisms to transfer the results of research, restitution and documentation of Palaeolithic art to society in general. To do this, an AR application has been created using LiDAR technology, solving the current problems concerning implementing AR technologies in dark spaces. So far this app has been applied to Spanish archaeological sites such as Hornos de la Peña (Cantabria), Domingo García (Segovia) and La Salud (Salamanca). This application will be particularly interesting for those sites that are currently visited with or without a guide, allowing user interactivity and real-time reconstruction, for example, of the visibility of graphic motifs.

374 WEAVING GLOBAL STANDARDS FOR ARCHAEOLOGY: UNIVERSAL GUIDANCE LOOMS

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Hinton, Peter (Chartered Institute for Archaeologists) - Kyle, James (Institute of Archaeologists of Ireland) - Drummer, Clara (ClfA Deutschland)

Session format: Workshop

This proposal relates to creating and applying ethical standards in research and practice.

In a session co-organised by the Chartered Institute for Archaeologists (CIFA) and the Institute of Archaeologists of Ireland (IAI) at the 2022 Budapest meeting, we discussed the potential benefits of universally applicable standards for archaeology, and high-level guidance on how they should be met. We also explored the impossibility of applying detailed guidance globally, recognising the wide variations of law, policy, practice and culture between different jurisdictions. Meeting those challenges, we looked at how country-specific guidance can support and be woven into CIFA's emergent global framework of ethical code, standards and high-level guidance, using an example from Northern Ireland.

This workshop will examine the consultation draft ClfA guidance, and any other specialist or professional guidance which is intended for multinational (not national or regional) use, and which is supplied before the meeting.

We envisage a moderated co-creative writing workshop, not a programme of papers.

375 HOW FAR WOULD YOU GO? THE ROLE OF MOBILITY IN STONE AGE HUNTER-GATHERER-FISHER COMMUNITIES [PAM]

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Mahlstedt, Svea (Lower Saxony Institute for Historical Coastal Research) - Posch, Caroline (Naturhistorisches Museum Wien) - Groß, Daniel (Museum Lolland-Falster) - Onfray, Marylise (UMR 6554 LETG-Brest)

Session format: Regular session

Mobility is seen as key to understand Stone Age lifeways and subsistence of hunter-gatherer-fisher communities. A large variety of different aspects is summarized in the concept of mobility.

Economical decisions are important motives for hunter-gatherer mobility. This has repeatedly been shown, using, for instance, ethnographic analogies (e.g. Groß et al. 2019) or theoretical constructions, as the marginal value theorem

(e.g. Venkataraman et al. 2017). Applied to archaeological sites, a reconstruction of the local environment is quite often available and thus allows us to develop further analysis and theories regarding prehistoric movements in a landscape (e.g. Boethius et al. 2022).

However, other important aspects are harder to trace archaeologically: Where are the borders of mobility (physically and mentally)? When did people stop and turn around? Can we trace the reasons for these limits of mobility, which in turn result in regional behavior? At which point did orientation strategies like piloting and homing (Golledge 2003) as well as traditions, songs, or stories may have played a part in everyday mobility?

In this session, we want to discuss and shed light on as many aspects of mobility in hunter-gatherer-fisher communities as possible. We welcome a wide range of contributions (from ethnographic to archaeological and computational methods), considering not only the different environments in which the foraging communities lived, like open steppe-like environments, forests, mountainous landscapes, and maritime areas but also look at different methods and means of analysis, e.g. origin of raw materials, shape of sites, rhythmicity of settlement, navigation or theoretical attempts. Single case studies are welcomed as well.

ABSTRACTS

1 LET'S RE-EVALUATE. THE EARLY MESOLITHIC IN THE NORTHERN EUROPEAN LOWLANDS

Abstract author(s): Groß, Daniel (Museum Lolland-Falster)

Abstract format: Oral

The expansion of 'the Mesolithic' into the Northern European Lowlands has been subject to several theories in the past. Roughly speaking, we can divide an autochthonous and an allochthonous genesis hypothesis: The development from Late Glacial Ahrensburgian via the Long Blade Industries or the expansion of post-Federmesser groups. Both theories have arguments for and against them and have been argued for from different stand points, e.g. technological, typological, or ecological, and by different researchers.

In this contribution I will briefly re-evaluate existing theories and models for the expansion of the early Mesolithic into the area in the light of a refined data set. Especially in the last decade, many more direct dates on artefacts and sites have been acquired and significantly increased the resolution of the Early Mesolithic chronology in the area. I intend to critically reflect my own findings from previous studies and consider new perspectives in order to develop a better model of how the Mesolithic might have taken foothold in the Northern European Lowlands.

2 WHERE TO GO TO? SPATIAL KNOWLEDGE IN LATE PALAEO-LITHIC NORTHERN GERMANY AND DENMARK

Abstract author(s): Grimm, Sonja - Eriksen, Berit (ZBSA - Centre for Baltic and Scandinavian Archaeology; CRC 1266 Scales of Transformation) - Weber, Mara-Julia (Museum of Archaeology, Schloss Gottorf; CRC 1266 Scales of Transformation) - Krüger, Sascha (National Museum of Denmark)

Abstract format: Oral

During the last glacial maximum (c. 24.5-17.0 kyrs BCE), the Scandinavian ice sheet covered parts of northern Germany. With the retreat of the ice sheets, barren land remained that was formed by its glacial past and still shaped by periglacial processes. Flora and fauna gradually re-occupied and developed this landscape during the Weichselian Lateglacial (c. 12.7-9.7 kyrs BCE) and the beginning of the Holocene (9.7-9.4 kyrs BCE).

Humans who first entered this environment at the beginning of the Weichselian Lateglacial came to a world that had not existed before and that was still changing. They had to explore this landscape and identify favourable areas for settling, hunting, gathering, fishing, and providing with other (e.g. mineral) resources, hence, give directions to their mobility. Probably these foragers used traditional knowledge about environmental interactions to make decisions at the start. Yet, how soon could they establish a traditional ecological knowledge of this unstable landscape? What role did communication among different groups play in establishing this knowledge? While the demographic processes, in particular, the continuity of occupation is still a matter of discussion in Schleswig-Holstein and Denmark, we know of several sites with multiple episodes of occupation. Had these sites favourable topographies that foragers would generally choose in very different ecological circumstances? Or were the circumstances not as different as we had thought in the past? Can we establish some kind of spatial memory that may have lasted across different archaeological taxonomic units and different ecological settings? We approach some of these questions comparatively using a record of Late Palaeolithic sites in Schleswig-Holstein and Denmark and the environmental reconstructions of these areas at different periods of the Weichselian Lateglacial and Early Holocene.

3 **CONSIDERING PIONEERS' MAPPING OF PENINSULAR BRITAIN. TRAVERSING THE EXTREMES OF NORTH-WESTERN LATE GLACIAL EUROPE WITH FRAGMENTS OF HISTORIC KNOWLEDGE**

Abstract author(s): Mills, William (ZBSA, Schleswig)

Abstract format: Oral

The archaeological record of Peninsular Britain clearly indicates multiple occupations by pioneers of this north-western extent of Late Glacial Europe (15500 to 11900 years ago). Now an archipelago, through mapping and modelling of the submerged landscapes of the Channel River and Doggerland it is possible to assess different routes of access to this peninsular during the Late Glacial and Early Holocene. The Late Glacial is of particular interest as there are significant climatic and environmental transitions that take place relatively rapidly, with clear signs of contrasting human adaptations. Some of these archaeological signatures can be interpreted as part of a broader mobility and landscape strategy. There are few analogous environments to the Late Glacial in the world today, with some of the closest examples found in the Canadian arctic, sub-arctic and boreal regions.

Contemporary and historic records of mobility patterns, resources availability and use (for mobility), and landscape strategies conducive to successful travelling through these types of landscape can provide insight into potential past mobility strategies. This talk will focus on the account of Samuel Hearne, and how Matonabee guided him through boreal, sub-arctic and arctic landscapes during the 18th century. It is argued that whilst taking into account a critical assessment of the narrative (the time of writing, the author's perspective, travelling objective, and cultural understanding) that some genuine universal mobility strategies can be recovered from these accounts. A second level of critical assessment is needed to assess how they might be used to help interpret the archaeological record, the pitfalls to avoid, and the perspectives that this landscape-knowledge may shed on the archaeological record.

4 **HUNTING, FORAGING, WALKING, AND RUNNING IN THE MOUNTAINS IN THE MESOLITHIC - A CASE STUDY FROM THE KARWENDEL MOUNTAINS (AUSTRIA)**

Abstract author(s): von Nicolai, Caroline (Römisch-Germanische Kommission des Deutschen Archäologischen Institutes)

Abstract format: Oral

Since 2015, a Mesolithic campsite is excavated in the Karwendel Mountains, at the German-Austrian border at an altitude of 1800 m asl. The hunter-gatherers frequenting this site travelled over large distances, as the use of different raw material sources, as well as typological and technical details of the lithic artefacts show. But how far did they go and how fast could they travel, depending on how the group was composed? The discovery of a child's tooth indicates that not only adults but also children ventured into the mountains. This paper draws on ethnographic and modern examples from persistence hunting and long distance running, as well as on GIS studies to determine the distances that could in theory be covered by foraging communities in this environment. It also studies which paths and landmarks may have been used when travelling from Upper Bavaria (e. g. the Munich gravel plain) to this part of the Eastern Alps.

5 **TAKE A WALK ON THE STEEP SIDE. MESOLITHIC MOBILITY CONCEPTS IN THE NORTHERN AND SOUTHERN ALPS OF AUSTRIA**

Abstract author(s): Posch, Caroline (Naturhistorisches Museum Wien) - Danthine, Brigit (Austrian Archaeological Institute at the Austrian Academy of Science) - Haas, Julia - Lamprecht, Roman (University of Innsbruck)

Abstract format: Oral

Since 18.000 BP, after the diminishing of the inner Alpine ice shields, the Alps became again accessible for animals, plants, and humans alike. These 'new' landscapes offered vast possibilities, e.g. the availability of primary lithic and rock crystal deposits as well as new migrations routes from north to south, east to west, and vice versa. However, mountainous landscapes also demand new concepts of mobility. From now on, it was vital to see one's world not only in its horizontal but also in its vertical dimension. Since several decades, various models for the mobility of alpine hunter-gatherer communities (HG) have been proposed. They include general observations on possible year-round mobility patterns as well as catalogues of specific characteristics where Mesolithic campsites appear most frequently in alpine landscapes.

Often within these models, a position of camps along preferred, 'central' routes through the landscape are proposed. Furthermore, activity zones of one and two hours around the respective HG campsites are put forward, based on ethno-archaeological observations. But are they really feasible when put against the actual archaeological record in vertical spaces such as the Alps? In order to test these models, we propose using GIS-based analyses – least cost path (LCP) and site catchment analysis (SCA) – to calculate hypothetical patterns of movement in two case study regions: The Kleinwalsertal in the Northern Alps as well as the Carnic Crest in the Southern Alps of Austria. In doing

so we want to ask: Are the archaeological sites of HGF groups located along these ideal paths? And if so, can these calculations be of benefit during archaeological survey campaigns?

6 **CHERT PROCUREMENT IN EASTERN IBERIA: TRACING HUNTER-GATHERERS MOBILITY**

Abstract author(s): Ramacciotti, Mirco - García-Puchol, Oretó - Gallelo, Gianni - Diez Castillo, Agustín (Department of Prehistory, Archaeology and Ancient History, University of Valencia) - Cortell-Nicolau, Alfredo (McDonald Institute for Archaeological Research, University of Cambridge) - Juan Cabanilles, Joaquim (Prehistory Research Service, Prehistory Museum of Valencia) - McClure, Sarah B. (Department of Anthropology, University of California)

Abstract format: Oral

The characterisation and identification of siliceous raw materials used in the production of lithic objects is pivotal in order to retrace the mobility of prehistoric populations. In the past few years, a project of geochemical characterisation of the potential chert sources located in different areas of the Valencian Community has been carried out by multielement analysis.

This first study successfully identified the main local and non-local sources of raw materials associated with Cueva de la Cocina (Dos Aguas, Valencia), a key site for understanding the socio-ecological dynamics of the last hunter-gatherer populations in the Western Mediterranean by cross-referencing data from geological samples and from selected artefacts. Furthermore, a study focused on lithic objects from the Late Mesolithic levels revealed the presence of a non-local chert type widely used in the Northern Valencian Community. The obtained results support previous mobility data based on the presence of seafood remains and strengthen the hypothesis of possible connections between the Mesolithic groups from Cueva de la Cocina and Northern region settlements. Our goal consists of discussing spatial mobility patterns focusing on local and microregional data in order to discuss socioecological dynamics of the last hunter-gatherers in the Eastern Iberia.

7 **TIME AND TIME AGAIN - THE REPEATED USE OF STONE AGE SITES AND OUR UNDERSTANDING OF GROUP MOBILITY**

Abstract author(s): Mahlstedt, Svea (Lower Saxony Institute for Historical Coastal Research)

Abstract format: Oral

In areas of relatively poor preservation and unspecific raw material resources as in the sandy uplands of north western Germany and the northern Netherlands, mobility seems not easy to track. Still, site structures and assemblage sizes as well as radiocarbon dates give the impression of repeated use of sites and areas. How can we unravel regularly repeated visits in the timeframe of a few years or decades? Can our interpretation of the site function help to get an impression of the inhabitants' group size and the duration of their stay? How much movement do we expect throughout a foraging year? And how does a long term or repeated use of a site of several hundred years fit into our ideas of group mobility, traditions and change? This paper is going to combine case studies in the mentioned areas with some more general questions on our interpretational background and understanding of hunter-gatherer mobility and regionality.

8 **ASPECTS OF MOBILITY; CASE STUDIES FROM THE MESOLITHIC OF THE RHINE-MEUSE DELTA**

Abstract author(s): Muller, Axel (ADC archeoprojecten)

Abstract format: Oral

In the last 15 years some large stone age sites have been excavated in the Dutch Rhine Meuse delta. The research focus has been quite often on functional interpretation of flint scatters, in terms of classification on the logistic-residential spectrum, e.g. hunting vs base camp. Mobility is only addressed indirectly.

During recent fieldwork we applied different aims to gather data which allows more specific analysis on mobility questions.

In the presentation we focus on three main aspects. Paleo-geographic and vegetation reconstructions can give an opportunity to get a better understanding of the landscape, landscape dynamics and the relation between hunter-gatherers and available resources. Proxy's like raw material units, use wear analysis on flint artifacts and the study of botanical remains, can give detailed insight in activities, seasonality and other aspects of hunter-gatherer society. The relation between activities and landscapes can be analyzed in terms of land use and mobility in or between different zones in a landscape or between different regions and landscapes.

The shift of focus from flint scatters to a combination with these other aspects also gives an opportunity for different methods for future fieldwork (assessment, evaluation and excavations) in development led archaeology. This can give a more balanced research strategy where there is equal attention for all the different aspects of stone age society.

9 PECULIAR RAW MATERIAL AND SITE STRUCTURE AS EVIDENCE FOR MOBILITY OF MESOLITHIC HUNTERS IN SOUTHEASTERN AND EASTERN LITHUANIA

Abstract author(s): Gaižauskas, Lukas (Lithuanian Institute of History)

Abstract format: Oral

In the setting of Southeastern and Eastern Lithuania, most of the find assemblages from Stone Age dryland sites are dominated by artefacts and waste produced from one type of raw material – black or grey Baltic erratic flint, which cannot be reliably linked to particular extraction sources. This combined with the repeated settling of the same areas in the landscape by different hunter-gatherer-fisher groups makes the understanding of aspects such as settlement patterns and mobility during any particular period very difficult. However, one peculiar raw material – erratic flint with reddish or brownish bands, the use of which is mostly constrained to the Mesolithic, can throw some light on these questions.

In this paper it is proposed that by merging the trails of evidence from the use of aforementioned particular raw material and the structure of sites as well as qualitative and quantitative aspects of artefact assemblages it is possible to reconstruct some aspects of mobility characteristic of the Middle to Late Mesolithic hunter-gatherer-fisher groups in Southeastern and Eastern Lithuania. The geographical spread of artefacts from red-banded flint is used to tentatively indicate the movement patterns of the Mesolithic people who used this raw material. In addition, the research into the character of the assemblages and site structure, especially at recently discovered single-period campsites, provides new data points for the pattern of settlement, which is very much intertwined with the question of mobility.

10 MOBILITY AMONG THE PITTED WARE CULTURE ISLAND FORAGERS OF JETTBÖLE, ÅLAND, INVESTIGATED THROUGH SEQUENTIAL STRONTIUM ISOTOPE ANALYSIS

Abstract author(s): Boethius, Adam (Lund University) - Storå, Jan (Stockholm University)

Abstract format: Oral

The middle Neolithic site Jettböle, on the island of Åland in the Baltic Sea, dated to c.5300-2400 cal BP, is one of the northern- and also easternmost Pitted Ware Culture (PWC) sites. A marine-oriented subsistence is evidenced through stable isotope analyses ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) and confirmed by zooarchaeological analyses suggesting a human subsistence based on marine resources, i.e. fish, seals and aquatic living birds, with terrestrial animals being largely absent. The site also exhibits a ritualized handling of human remains and a very rich find material, including anthropomorphic clay figurines. While diet and subsistence strategies have been frequently discussed for various PWC culture foragers their mobility patterns are less thoroughly investigated. To increase our knowledge of Middle Neolithic PWC foragers in the Baltic Sea area, and explore questions of human origin/mobility, diet and subsistence patterns among the island foragers, we have analysed the $^{87}\text{Sr}/^{86}\text{Sr}$ ratios in the enamel of selected human, harp seal and dog teeth from the island of Åland. To contextualize the data from Åland, we have also analysed harp seal teeth from two other PWC contexts, Korsnäs, now located on mainland Sweden, and Ajvide, on the island of Gotland. By using high-resolution strontium data, our results show that it is possible to study and interpret the mobility patterns of both animals and humans within the frame of a Scandinavian Neolithic foraging context. This insight provides us with a frame for understanding the coexistence of Scandinavian hunter-fisher-gatherers and farmers/pastoralists.

11 WHAT MOBILITY AMONG MESOLITHIC COMMUNITIES ON THE ATLANTIC COAST? GEOARCHAEOLOGICAL INVESTIGATION OF THE BEG-ER-VIL SITE (QUIBERON, FRANCE)

Abstract author(s): Onfray, Marylise (UMR 6554 LETG-Brest) - Marchand, Grégor (CNRS, Université de Rennes 1, UMR 6566 Creahh)

Abstract format: Oral

Access to food sources is one of the main motivations for hunter-gatherer societies to move. Depending on the season, the nutritional properties of these foods, their diversity and quantity vary greatly, allowing for a wide variety of mobility patterns. Social factors or weather are also essential parameters more difficult to integrate into our archaeological thinking. The shell middens on the south coast of Brittany allow us to understand some of these variables. Excavated since the 1930s they have revealed a variety of domestic structures, including dwelling units and solidly built hearths in Beg-er-Vil, suggesting long-term or repeated occupation. The bioarchaeological and palaeoenvironmental data collected also provide a better understanding of the organisation of this predatory economy.

These archaeological data, collected in a coastal context, have long raised questions about residence times, possible reoccupations of these sites, and thus the degree of mobility of these societies. Geoarchaeological data resulting from the characterisation of the formation processes of the sites can provide details about the temporality and rhythm of occupation, but so far they had never been explored on Breton sites.

When excavations at the Beg-er-Vil site resumed in 2012, the stratigraphy of both the shell midden and the adjacent occupation layers could be followed closely. A spatial sampling strategy for micromorphological analysis inside and outside the midden was developed. The aim of this paper is to present the variability of the identified signals between the sequences in the shell midden and those in the occupation layers, and to compare the geoarchaeological data with archaeological field data. This research is carried out within the framework of the GEOPRAS programme (GEOarchaeology and Prehistory of Atlantic Societies), funded by the Agence Nationale de la Recherche (ANR).

376 **FRAGMENTED METALWORK IN HOARDS AND OTHER DEPOSITS - REGIONAL AND TEMPORAL VARIATIONS IN THE EUROPEAN BRONZE AGE**

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Sörman, Anna (Nantes University - LARA/UMR 6566 CReAAH; Stockholm University - Dept. of Archaeology and Classical Studies) - Bordas, Francis (University Toulouse Jean Jaurès - UMR 5608 TRACES) - Knight, Matthew (National Museums Scotland) - Nordez, Marilou (CReAAH laboratory - UMR 6566; TRACES laboratory- UMR 5608)

Session format: Regular session

Deliberate hoarding and deposition of metalwork was a widespread practice throughout the European Bronze Age. In numerous regions these assemblages did not only contain intact objects but also broken objects, incomplete bits and pieces.

Traditionally, fragments in hoards were assumed to be commodified raw material for recycling or trade. Explanations for this phenomenon have become more diverse and complex over the last decades. Now, interpretations also evoke ideas about making hoards-within-the-hoard, pars pro toto symbolism, ritual damage, fragments as keepsakes or forms of social enchainment, heirlooms and memorabilia etc. Furthermore, the analyses of their role in possible weight economies and their importance as means of transactions have developed. The last decades of studies have also shown that these hypotheses have varying applicability in different times and regions. Despite overarching similarities, there are temporal and regional variations as to how and why bronzes were broken in Bronze Age communities.

The aim of this session is to discuss similarities and differences in the phenomena of fragmented metalwork in hoards. We invite contributions dealing with different times and regions of the European Bronze Age, as well as adjacent periods (Chalcolithic, Early Iron Age) and neighbouring regions featuring this practice. Studies might concern various scales; from the individual deposit, local expressions, regional synthesis or inter-regional comparisons. Relevant issues might be (but are not limited to) the relation between fragmented and complete artefacts, selection of objects for fragmentation, metrology and 'hack bronze', methods for breakage, inter-depositional relations etc. The intention is to contribute to an overview of studies currently working on this theme, and to start the formation of a European research network.

ABSTRACTS

1 **BREAK AND MAKE? FRAGMENTATION AS PROOF FOR EARLY METALURGY IN THE NEOLITHIC FUNNEL BEAKER SOCIETIES**

Abstract author(s): Skorna, Henry (Excellence Cluster ROOTS - University of Kiel)

Abstract format: Oral

The turn from the 5th to the 4th millennium BCE is a period of drastic changes for the societies of the south-western Baltic region. Major innovations like the domestication of animals and the cultivation of grains are slowly changing the subsistence strategy and replacing the more mobile life style of hunter-gatherer groups. At the same time an innovation centre for metallurgy has already formed in South-East Europe with its beginning dating back to roughly 5000 BCE. Products from this early production centres are also reaching Northern Europe and a range of copper objects is deposited by the Funnel Beaker Societies.

Until the very recent finds of a crucible and tuyere from Lønt/Denmark no hard proof for a own production of copper objects in the "North" was known. Using the example of the recently published analyses of the hoard find of Neuenkirchen (NE-Germany) this paper will show that a different kind of evidence for an independent copper industry might have been overlooked so far. The flat axe fragment of the Neuenkirchen hoard shows signs that "hot-shorting" was used as fragmentation technique for the deliberate destruction. This shows the presence of sound metallurgical knowledge already around 3800/3700 BCE. Based on this discovery the corpus of the neolithic copper find in the south-western Baltic region is revisited for signs of the deliberated destruction of objects using this method and to determine if there is more evidence to substantiate the pre-dating of an independent production of metal objects, 1500 years earlier than previously thought.

2 **FRAGMENTED METALWORK IN HOARDS FROM THE ATLANTIC MIDDLE BRONZE AGE 2 IN NORTH-WESTERN FRANCE: DATA FALLACY OR ANCIENT REALITY?**

Abstract author(s): Sörman, Anna (Nantes Université (LARA/UMR 6566 CReAAH); Stockholm University (Dept. of Archaeology and Classical Studies) - Nordez, Marilou (UMR 6566 CReAAH, Rennes; UMR 5608 TRACES, Toulouse) - Mélin, Muriel (Service départemental d'archéologie du Morbihan; UMR 6566 CReAAH)

Abstract format: Oral

In the Atlantic area, the Middle Bronze Age is associated with a drastic increase in the deposition of metalwork. While this practice remained relatively limited in Atlantic Middle Bronze Age 1 (AMBA 1, 1600-1450 BC), it expanded considerably in Middle Bronze Age 2 (AMBA 2, 1450-1300 BC). Another difference between the early and the late phase is the presence of incomplete objects; while fragments are rather common in AMBA1 hoards, they are much scarcer in hoards from AMBA2. This leads to the question: while the inclusion of incomplete objects in hoards is attested both for the AMBA1 and the following Atlantic Late Bronze Age, did this practice also exist in the AMBA2? And if so, to what extent? Moreover, most fragmented objects from AMBA2 belong to hoards recovered before the establishment of modern archaeology. Could the fragments even be the result of a data fallacy where recent fractures appear ancient due to patina or mineralization which has formed after their discovery?

In this paper we explore incomplete objects in Middle Bronze Age hoards as one analytical window to evaluate the existence of AMBA2 fragmentation. The investigation is based on a selection of hoards from north-western France, particularly Bretagne and Pays de la Loire. Based on ocular study of breaks and damages on incomplete objects, we evaluate the timing of the break. Next, we raise questions about methods of breaks and manipulations and selection of pieces for deposition. These observations are then compared to fragmentation in the AMBA1 and to contemporary fragmentation practices in other regions. These results will clarify the presence or absence of fragmentation during AMBA2, and contribute to the ongoing debate about various functions and values of broken bronze.

3 **LARGELY MISSING. THE IMPORTANCE OF ORGANIC COMPONENTS IN FRAGMENTING BRONZE AGE METAL ARTEFACTS**

Abstract author(s): Mörtz, Tobias (University of Hamburg)

Abstract format: Oral

Most Bronze Age weapons and tools had important functional components made of bone, horn, leather or wood. These were often not preserved, on the one hand because of the conservation conditions of the respective find context, and on the other hand because they had been deliberately removed before being deposited. This was mostly done with little care, using considerable force, for example when tearing off handle plates or breaking off shafts. In some cases, the artefacts were also burnt. These acts usually occurred before further fragmentation of the metal parts and already clearly limited the possible uses of the artefacts concerned. The contribution discusses this procedure on the basis of two characteristic hoard phenomena of the Late Bronze Age in western Europe, namely, weapon depositions and sockets blocked with small fragments in mixed depositions. In both cases, very different practices are evident, which can hardly be explained by craft activities related to recycling.

4 **BRIDGING THE RITUAL AND PROFANE - THE LATE BRONZE AGE HOARD FROM HEGRA, NORWAY**

Abstract author(s): Henriksen, Merete (NTNU University museum)

Abstract format: Oral

The Late Bronze Age hoard from Hegra in the valley of Stjørdal, Central Norway, comprises more than 40 complete and fragmented objects of bronze of which socketed axes make up the majority. The objects were probably deposited in one single event c. 700-500 BC. Among the 26 axes in the hoard, six contained small fragments of bronze, mainly the cutting edges of axes, that had been put into their sockets. The one spearhead in the find had been subjected to the same treatment, with a casting jet put into its socket, and two fragments of a bronze lur also contained small fragments of metal. With several of its objects deposited in a fragmented state, the Hegra hoard belongs to a specific group within the larger group of so-called scrap hoards from the latter part of the Bronze Age in Europe, characterized by the occurrence of socketed axes and spearheads filled up with fragmented metalwork. While such hoards have traditionally been seen as bulks of metal meant to be retrieved and recycled, the find context of the Hegra hoard suggests that more complex motives lay behind its deposition. Following the discovery of the hoard in 2017, an excavation revealed the objects to have been deposited in a small wetland. Surrounded by important rock art sites, the site would have been situated in a ritual landscape of special significance in the Bronze Age. The hoard thus contains both functional and ritual elements. Based on studies of the objects themselves and the results of the excavation along with botanical and metallurgical analyses, the paper aims at discussing what could be learned from this hoard regarding the practice of deposition in the Bronze Age.

5 BRONZE AGE SWORDS BROKEN IN PIECES – NEW EVIDENCE FROM CENTRAL GERMANY

Abstract author(s): Maraszek, Regine (Museum of Prehistory Halle)

Abstract format: Oral

In Central Germany we find one of the richest hoarding regions of the European Bronze Age, especially the middle Saale area with mass finds of axes and rings, later sickles presents a unique metal wealth. We can observe here traditions of similar deposition rites lasting more than 1000 years, with an interruption in the middle of the 2nd millennium BC. The fragmentation of some bronzes like sickles show temporal and regional patterns. This could now also apply to swords.

Half of the Bronze Age swords from central Germany were variably damaged or fragmented before coming into the ground. The degree of fragmentation could not be related to the find context so far. New findings from the Altmark region allow new insights. The exploration of an old low moorland area east of Lake Arendsee yielded numerous indications of repeated metal deposits from the Bronze Age to the Iron Age. These include hoards with sword fragments. The destruction gives us an idea of a rarely observed central German hoarding pattern.

6 FRAGMENTATION OF METALWORK DURING THE LATE BRONZE AGE AND EARLY IRON AGE IN THE LOWER DANUBE REGION

Abstract author(s): Matau, Florica (Arheoinvest Center, Institute for Interdisciplinary Research, Department of Exact and Natural Sciences, Alexandru Ioan Cuza University of Iasi)

Abstract format: Oral

The analysis of the fragmentation in this study relies on the bronze hoards identified in the southern part of Romania and the northern part of Bulgaria. It aims to identify and classify the intentionality of the fragmentation practice, the different torsions and blow marks, or the destruction of the artefacts. For assessing the spatial and regional fluctuations registered within the fragmentation pattern a comparison between the two periods will be done. The different wear and tear marks on objects will be examined and the relationship between intensive natural use and intentional fragmentation will be explored. Besides, the relationship between the hoards and the single finds will be investigated.

In the studied area the most fragmented artefact category is represented by the tools, mainly due to their increased frequency. They dominate the weapons, the ornaments, the raw materials, and the moulds. The sickles and socketed are the most widespread artefact category and they register various fragmentation patterns. The weapons category is dominated by spearheads with a wide variety of damage and fragmentation patterns, while the swords included in the hoards are always damaged or fragmented, unlike the single finds that are always intact. Within the ornaments, the bracelets are worth mentioning because they dominate this category and do not appear throughout both periods.

7 FRAGMENTED METALWORK HOARDS AS A SELECTIVE PRACTICE IN LATE BRONZE AGE NORTH-WESTERN EUROPE

Abstract author(s): Knight, Matthew (National Museum of Scotland)

Abstract format: Oral

Hoards of fragmented metalwork are often seen as one of the defining practices of Late Bronze Age communities in Europe. Such hoards have attracted much attention with debates around how and why metalwork was broken and buried. Were hoards abandoned scrap? Or was there a ritual aspect? Although it is true that some regions have a high volume of fragmented metalwork hoards, such as the Boughton-Vénat tradition of south-eastern England and northern France, other regions of north-western Europe, such as the Netherlands and Ireland, are devoid of fragmented hoards. This highlights variability in hoarding traditions that is rarely considered. Instead of focusing solely on 'why' hoards were buried, in this paper I will present an overview of hoarding across north-western Europe and highlight the regionality of this practice that is often overlooked. In particular, I will consider that the fragmentation and deposition of metalwork was a selective practice that varied across different areas at different times and involved deciding what should be broken and where it should be buried.

8 METAL FRAGMENTATION AND METROLOGICAL PRACTICES IN ATLANTIC GAUL DURING THE LATE BRONZE AGE

Abstract author(s): Francis, Bordas - Thibaud, Poigt (Université Toulouse Jean Jaurès)

Abstract format: Oral

The fragmentation of metal is a recurrent practice of the European Late Bronze Age. It is particularly observed through the metal hoards of several cultural horizons. It is generally accepted that such a practice results from technological or economic gestures, sometimes based on the idea that the fragments follow strict metrological patterns in order to facilitate the quantification of the metal.

In order to contribute to this debate, we focused in this paper on the BFa 3 (c. 950-800 BCE) hoards of Atlantic Gaul, which have the advantage of being particularly numerous, covering large areas and consisting of a wide variety of objects. The data studied thus concern nearly 200 hoards for a little more than 10500 artefacts collected.

The aim of this paper is to test the metrological potential of these sample of data – based in particular on statistical approaches – through the analysis of their masses and dimensions. The results of this study and their interpretation will allow to determine what degree of metrological standardisation governs the practice of metal fragmentation in this specific context, from empirical quantification to accurate metrological norms.

From there, we will propose explanations to such applications in the Bronze Age societies, specifically in terms of economic and technological uses.

Even if it is an appealing idea, the use of metrological standards is not a prerequisite to the fragmentation of metal. Even in an exchange context, metal fragments could have been quantified in an empirical manner, by obtaining fragments of recurrent morphology, whose shapes would be sufficiently evocative to allow the appreciation of their exchange value. Through this paper, we want to characterize the degree of normalisation expected by the fragmentation process, through the point of view of the metrological practices, in LBA Atlantic Gaul.

9 **FRAGMENTING BRONZES FOR SHAPING MONEY? QUANTITATIVE ANALYSIS OF BRONZE FRAGMENTATION FROM LATE BRONZE AGE EUROPEAN HOARDS**

Abstract author(s): Lago, Giancarlo (University of Salento)

Abstract format: Oral

The phenomenon of European Bronze Age (BA) depositions (hoarding) is characterized by a significant difference between early stages – when mostly complete objects were buried – and late stages, distinguished by the recurrence of metal fragmentation. Several hypotheses have been stated to explain this phenomenon, the main ones dealing with the possibility that metal objects were broken during ritual activity; metal fragmentation aiming at recycling bronze; weight-based metal fragmentation to use bronze fragments like money. During the last decade, studies on weight systems and weighing instruments drastically changed the state of knowledge on the metrology of the European BA and the Near East. It entails several important consequences on archaeological economic studies. The newly achieved knowledge of weight systems allowed for comparing weight of fragments to weight systems currently used during Late BA (LBA). Based on statistical analyses, recent studies show that fragments and balance weight are compliant, implying that a statistically significant number of metal objects were fragmented to be used like money.

The contribution presented here proposes an overview of the main results of my recently concluded PhD research ‘Metal fragmentation in European Bronze Age hoards’ (Sapienza University of Rome). It involved the creation of a database of ca. 1400 hoards and ca. 31000 objects from BA (2200-800 BC) in Central and South Europe (Italy, Switzerland, Austria, Germany, and Slovenia). The seriation based on the presence/absence and the share of completeness/fragmentation of objects allowed for drawing macro-areas based on the kind of objects circulating and the recurrence of fragmentation through time. Quantitative analyses show that the number and mass of fragments overcome the number and mass of complete objects almost everywhere in Europe during the LBA (1350-800 BC). Updating metrological analyses with the new sample of LBA fragments (ca. 4300) the hypothesis of monetary fragmentation remains still valid.

10 **THE BANALITY OF FRAGMENTS. METAL FRAGMENTATION AND HOARDING BEYOND THE EUROPEAN BRONZE AGE**

Abstract author(s): Ialongo, Nicola (University of Göttingen)

Abstract format: Oral

What are metal fragments for?

Fragmentation and hoarding are undoubtedly among of the most emblematic, and most debated aspects of European Prehistory. They are generally thought to be unique and original phenomena that intimately define the European Bronze Age, in opposition to other historical periods and regions. As a consequence, we tend to think that the fragmentation and hoarding phenomena must have a meaning in themselves, their origins residing in motivations – whether religious, practical or economic – that were unique to Bronze Age Europe and absent elsewhere. But what if they were a response to a set of circumstances that different societies in different periods shared, but coped with in different ways?

Fragmentation and hoarding are not exclusive to the European Bronze Age. In Bronze Age Mesopotamia, for example, fragmentation existed – although mainly limited to silver – as well as hoards, even though they were not nearly as common as they were in Europe. Metal hoarding in Europe, on the other hand, did not end with the Bronze Age, but continued well into the Iron Age, with metal fragments being eventually replaced by coins. On the opposite side of

the timeline, one could hardly make a relevant case for the absence of fragmentation and hoarding for periods prior to the Bronze Age, when metallurgy was not nearly as widespread or did not exist at all.

In this paper, I will approach fragmentation and hoarding as the possible 'epiphenomenon' of more substantial processes, of which fragmentation itself might simply be the most archaeologically-visible outcome. I will address the different forms that metal fragmentation and hoarding assume in different periods and regions, explore differences and similarities, and attempt to assess whether a common denominator exists, that could provide a coherent explanation consistent with the archaeological data.

377 MULTISCALAR APPROACHES TO PAST MOBILITY: FROM INDIVIDUALS TO POPULATIONS, AND FROM OBJECTS TO TECHNOLOGIES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Nikita, Efthimia (The Cyprus Institute) - Degryse, Patrick (KU Leuven)

Session format: Regular session

The circulation of ideas, technologies, material culture and individuals was prominent in the past in different forms and under diverse motivations. The 21st century has seen a strong interest in archaeological mobility studies, leading to the emergence of the so-called 'mobilities' paradigm. To disentangle the complex and dynamic movement of people, ideas, technologies, and objects, contemporary research acknowledges the importance of adopting multi-scalar approaches, encompassing the movement of single individuals and broader groups or entire populations, coupled with the circulation of material culture either as finished objects or as ideas and technologies. This session aims at bringing together scholars to discuss the challenges and potential of blending different methodological and theoretical approaches so that a deeper understanding of past mobility is gained. We are particularly interested in contributions that approach mobility across multiple scales. These scales may be a) spatiotemporal, that is, studies examining mobility at different durations of time and/or at a shorter and longer geographic scale, b) methodological, that is, transdisciplinary studies that provide complementary information on different dimensions of past mobility, or c) thematic, that is, studies that examine mobility simultaneously at the level of past individuals and groups or at the level of ideas/technologies and finished objects.

ABSTRACTS

1 MULTISCALAR APPROACHES TO MOBILITY: AN INTRODUCTION

Abstract author(s): Degryse, Patrick (Earth and Environmental Sciences, KU Leuven; Faculty of Archaeology, Leiden University)

Abstract format: Oral

The circulation of ideas, technologies, material culture and individuals was prominent in the past in different forms and under diverse motivations. Recent archaeological science has seen a strong interest in archaeological mobility studies, in the form of methodological-analytical developments, new theoretical approaches, and in the application of big data. To disentangle the movement of people, ideas, technologies, and objects, multi-scalar approaches are necessary, from the movement of single individuals to entire populations. This should be coupled with the study of the circulation of material culture, either as raw materials, finished objects or as ideas and technologies. Building large databases of baselines for researching origins of populations or the provenance of artefacts are another new aspect of this research. This session discusses the challenges and potentials of blending methodological and theoretical approaches to understand the often complex story of past mobility, with examples from the Greco-Roman world to the Far East.

2 METAMOBILITY: META-ANALYSIS AND AGENT-BASED MODELING OF HUMAN MOBILITY IN THE GRAECO-ROMAN WORLD

Abstract author(s): Nikita, Efthimia (The Cyprus Institute)

Abstract format: Oral

This presentation will focus on the MetaMobility project, the objective of which is to explore the nature and impact of human mobility in the Graeco-Roman world, focusing on the Hellenistic and Roman Eastern Mediterranean. To achieve this objective, MetaMobility integrates published human osteoarchaeological, zooarchaeological, archaeobotanical, economic and social historical data and tests alternative mobility scenarios via agent-based modeling. The bioarchaeological data come primarily from published information in journals and grey literature, but also from original data generated by our team members in Central and Eastern Mediterranean (Greece, Cyprus, Lebanon, Italy), showcasing the importance of maximizing the use of legacy data while also engaging in original data collection. The project

is multiscalar in the different geographic and temporal scales that it covers, but also in the diversity of approaches and analytical methodologies that are combined in order to elucidate different aspects of mobility at different levels of resolution. Preliminary results of the project will be presented, with emphasis on the open access databases our team is developing.

3 A MULTI-SCALAR APPROACH TO MOBILITY IN THE ROMAN WORLD

Abstract author(s): Mardini, Mahmoud (The Cyprus Institute)

Abstract format: Oral

The use of biodistance analysis provides an understanding of gene flow in past societies and has been applied to evaluate mobility and kinship over time and space. In the context of the Roman World, the study of mobility in its various forms (forced, voluntary, permanent, temporary, long-distance, short-distance) has been a focus of research, as it is known to have significantly influenced the character of the Roman society. The use of different proxies, with an emphasis on historical and archaeological evidence, has aided relevant research, but bioarchaeological studies also further our understanding of such phenomena. This paper presents a case study from Roman Phoenicia, whereby the results of biodistance analysis within and between Tyre, Beirut and Byblos are combined with osteobiographic markers of social divisions (e.g. demography, pathology, activity, diet) to explore the expression of different dimensions of kinship (genetic-fictive) and mobility. This multi-scalar approach examines various levels of mobility: individual (intra-site), group (inter-site), and societal (across the Roman Phoenician coast and among different biosocial groups), and offers a deeper understanding of regional and long-distance movement and its implications.

4 A SPATIOTEMPORAL STUDY OF POPULATION CONTINUITY AND DISCONTINUITY IN CENTRAL GREECE DURING CLASSICAL AND HELLENISTIC TIMES THROUGH BIODISTANCE ANALYSIS

Abstract author(s): Karligiotti, Anna (The Cyprus Institute) - Aravantinos, Vasilios (Ephorate of Antiquities of Boeotia, Hellenic Ministry of Culture and Sports) - Nikita, Efthymia (The Cyprus Institute)

Abstract format: Oral

During the Classical and Hellenistic periods mainland Greece was characterized by major historical events that shaped the Graeco-Roman world. The tumultuous history of the area is characterized by a series of great wars, the formation of alliances and city-states, as well as economic and cultural prosperity and decline. Boeotia held an active role to the aforementioned events, while its capital, Thebes, was one of the main powers in the area until its destruction by Alexander the Great in 335 BCE. Macedonian troops inhabited the area until its occupation by the Romans in the 2nd c. BCE. The aforementioned events had a great impact on the people inhabiting the area, causing population dislocations as attested in historical sources. For example, after the destruction of Thebes, the population fled to the adjacent city of Akraiphia as well as in Athens, and some returned after the city was rebuilt by Kassandros 20 years later. As such, the area and period under study present an ideal setting to examine population mobility. The current paper examines biodistances using dental nonmetric and metric data. Intra-cemetery biodistances are used to assess biological kinship patterns and the degree of heterogeneity within Thebes and Akraiphia during Hellenistic and Roman times, while inter-site biodistance analysis aims at elucidating the degree of gene flow between these two Boeotian cities in each of the above periods. Therefore, human mobility is explored at different resolutions (from pairwise individual distances to broader cemetery populations) and at different temporal and spatial scales.

5 WHO ARE YOU, WHERE DO YOU COME FROM AND WHERE DO YOU GO? MOBILITY AND CONNECTIVITY AT THE URNFIELD PERIOD

Abstract author(s): Fritzl, Michaela (Austrian Academy of Sciences)

Abstract format: Oral

The advance of the Urnfield Phenomenon is generally attributed to increased connectivity and mobility. However, various studies have pointed out that the reasons behind this assumption ranging from long term or seasonal migration to residence change upon marriage, moving warrior bands, traveling craftsmen, travel, trade and social visits are hard to grasp. Traditional archaeological techniques have reached their limits in exploring which reasons triggered the spread of cremation burials and the homogenisation in the material culture. Bio-chemical techniques provide the means of assessing individual mobility itself but the outcomes are rarely sufficiently integrated.

The cemetery of Inzersdorf ob der Traisen, Austria serves as a case study to show that mobility and connectivity should best be explored interdisciplinary. A combination of strontium isotope analysis, network analysis, analysis of the topographical features of the surrounding area and its connected sites as well as the archaeological assessment of the burials and its individuals is used to assess to which degree specific kinds of mobility and connectivity can be detected and how they influenced the community of Inzersdorf and its members in their social lives.

Through the careful application of selected techniques, we know more about which people were more mobile than others, why they were more mobile and how they were perceived within the society. Consequently, the impact of mobility on a society becomes clearer. Furthermore, we deepen our understanding in how mobility and connectivity shaped and were shaped by the communities in order to understand the dynamics in cross-cultural communication and finally in cultural shifts.

6 KOREAN CONTRIBUTIONS TO JAPANESE YAYOI AND KOFUN IN THE ARCHAEOLOGICAL RECORD: IMPORTATION, IMMIGRATION, OR INTEGRATION?

Abstract author(s): Fernández, Irene Minerva (International University Isabel I; Complutense University of Madrid)

Abstract format: Oral

During the Jōmon-Yayoi transition, a series of transformations in the populations and material culture appear in Japanese's archaeological record. These transformations, which lead to the beginning of the Yayoi era, are closely related to the introduction to the islands of a series of technological, cultural, and human contributions originated in the continent, and which are closely related to materials and structures excavated in the Korean mumum.

During the Yayoi and Kofun eras, the arrival of continental materials and populations seems to be a booster for socio-economic development, playing a paramount role on the emergence of a proto-state system which will lead to the establishment of the future imperial monarchy.

This work aims to analyze the Korean-influenced archaeological remains during Japanese Protohistory, while determining if their presence within the archipelago is due to the importation of materials and technology and/or to the arrival of immigrant agents, as well as to determine the degree of integration between these immigrant populations and the local human groups.

7 MOVING THE COMMUNITY: HABITATION MOBILITY IN LBA GREECE

Abstract author(s): Hilker, Sarah (University of North Carolina at Chapel Hill)

Abstract format: Oral

The Late Bronze Age mainland Greece saw a variety of sociopolitical changes, with increasing social stratification during the Early Mycenaean period, followed by the development and subsequent collapse of the Mycenaean palatial systems. Such changes, of course, could result in complex forms of human mobility.

In this paper, I examine architectural manifestations of localized habitation mobility that may be tied to wider sociopolitical processes. Many settlements founded or re-founded in late Middle Helladic (MH) or early Late Helladic (LH) Greece continued to be occupied throughout the Mycenaean palatial period, but there are a number of instances where abandonment during the Late Helladic period occurred and appears to have coincided with the establishment of another settlement in close proximity. In other cases, specific areas of a settlement were conspicuously abandoned while habitation persisted elsewhere.

Several examples of habitation mobility off previously flourishing acropoleis appear to have occurred around the transition to LH IIIA, a time of political change related to the development of Mycenaean palaces. It is difficult to pinpoint the precise chronological scale of these settlement shifts; the changes appear to have occurred fairly quickly, but they may not have been instantaneous or wholly contemporaneous with one another, especially as these examples are not confined to any one region or type of settlement.

Ultimately, I suggest that microscalar settlement shifts - localized habitation mobility - in Late Bronze Age Greece may indicate intentional community rebuilding in the face of macroscalar sociopolitical upheaval or change.

8 THE CURRENT STATE OF RESEARCH ON SCYTHIAN-CELTIC RELATIONS. SETTLEMENT HISTORY CHANGES IN NORTHWESTERN ROMANIA

Abstract author(s): Nagy, Norbert (Satu Mare County Museum)

Abstract format: Oral

The Scythians (Szentes-Vekerzug culture) of the 6th-4th centuries BC occupied the entire territory of the Great Hungarian Plain. In the second half of the 4th century, the Celts, bearers of the La Tène culture, appeared in Northwestern Romania. The relationship between Scythians and Celts has been studied by several researchers. One of them was János Némethi, who studied Iron Age cemeteries and settlements. He has published several works on Scythian and Celtic ceramic forms. In recent years, research has been expanded to include landscape archaeology. This has led to increased use of geographic information systems such as ArcGIS and GlobalMapper. At regional level, Carei area is especially important within the Northwestern Romanian territory for the study of the Scythian-Celtic connections. So far, there has not been any extensive study to analyse the environmental situation and the relationship between the Vekerzug and La Tène culture sites in the Carei area. The aim of my study is to synthesise the studies

carried out so far on these sites. I will list the researchers who have worked on this topic and mention the excavations and systematic researches. Systematic research has uncovered new archaeological sites. Most of the settlements are known from field surveys, but there are also large surface excavations. My aim is to map the Scythian and Celtic settlements in the Carei area (Nir Plain, Carei Plain, Crasna Plain). With the help of these maps, I will investigate the situation of the settlements compared to the cemeteries. I will also consider topographical, pedological and hydrological factors. Moreover, when choosing the locations of the settlements, altitude, closeness to water and absence of flooding were important reasons. The study offers a different perspective and new insights into the changing history of Iron Age settlements in the region.

378 THE MUSHROOM SPEAKS: AN ARCHAEOLOGY OF FUNGI ENTANGLEMENTS

Session theme: 3. Heritage Narratives and Representations

Session organisers: Schönicke, Julia (Freie Universität Berlin) - Holtorf, Cornelius (Linnaeus University) - Butler, Beverley (University College London)

Session format: Regular session

The ubiquity of fungi contrasts their underrepresentation in archaeology. It is about time to change that! All contexts we excavate underwent decomposition by fungi. In fact, the soil we are excavating IS the past, transformed by fungi. The story started with a symbiosis of algae and fungi – lichens – creating life on land 400 mya. Fungi challenge our logical thinking, create unimagined communication networks and question whether there is such a thing as an “individual” at all. This opens the stage for new interpretations of past and future lifeways. Yet, most of us meet mushrooms at the dining table and we can assume that this is also true for the past. But where are they in the archaeological record? And in what diverse ways can we grasp them as vibrant and variously curative-deadly heritage entities?

In this session, we aim to explore all kinds of fungi networks that can be investigated through archaeological thinking, critical heritage concepts and related methodologies. Beyond this however we wish to open up our critical perspectives to alternative creative paradigms that may relate further afield to fiction, futurisms, storytelling, legends, performance, artworks and activist interventions. Possible themes may include:

- Evidence in archaeological/ palaeoenvironmental contexts: recipes, textiles, pyrotechnology, iconography, texts, isotopes
- Social spheres: collective collecting, preparing, and eating mushrooms; transfer of knowledge, rituals, transformations of states of being, heritage pharmacology (after Butler)
- Rhizome thinking (after Deleuze/ Guattari) vs. tree thinking: alternative approaches to heritage and history(-making)
- Icons of the Anthropocene: atomic mushrooms; part of future studies as agents for decontamination, sustainable building material; models for neuronal networks
- Multispecies/ companion species networks (after Haraway/ Tsing) like the Wood Wide Web formed by mycorrhizae

We invite creative, provocative and subversive contributions from different fields and research background on any of these themes or completely new thoughts.

ABSTRACTS

1 PEOPLE ARE STRANGE WHEN YOU'RE A MUSHROOM – MULTISPECIES NARRATIVES IN THE RUINS OF THE ANTHROPOCENE

Abstract author(s): Schönicke, Julia (Freie Universität Berlin)

Abstract format: Oral

Hayao Miyazaki's dystopic anime “Nausicaä of the Valley of the Wind” (1984) takes place in a post-apocalyptic future that has been destroyed by nuclear war. Vast areas have since been covered by the Toxic Jungle, inhabited by giant mutant insects and mushrooms that release poisonous spores making it impossible for people to settle. While others want to burn down the forest, Nausicaä explores the lifeways of fungi and discovers that they clean the polluted earth. Only her engagement with the strange saves the world in the end. Fungi are widely associated with (post-)apocalyptic scenarios. This is not surprising as they survived all extinction events on planet Earth. Currently, we are in the middle of the 6th mass extinction driven by anthropogenic influence – the Holocene or Anthropocene extinction. Is there a way out? To overcome the present doomsday and human-centered scenarios, Donna Haraway suggested to give space to a yet unimagined Chthulucene to create more-than-human narratives in a multispecies cosmos. But how can we actually engage with multispecies approaches that also become more important in archaeology? Our current understanding of species is shaped by taxonomy through the anthropogenic lens. But recent microbiological and mycological research fundamentally challenges our perception of “individuals”. Since archaeologists aim to uncover

narratives of past/future lifeways, how can we avoid reconstructing relationships between humans and non-human entities based on our modern view? I argue that engaging with strangeness enables diving into multispecies narratives. For exposing and sensitizing us to strangeness, we need to escape the regulated paths of our capitalist environment. In urban areas, abandoned places provide secret hideouts for forgotten things and species in constant (re-)creation and decay – like Haraway’s “hot compost pile”. I demonstrate that exploring contemporary ruins and their fungal habitats offer ways to entangle with the strange, unexpected, and unknown.

2 THE FUNGAL LIVES OF RUINS: A MUSHROOM ARCHAEOLOGY

Abstract author(s): Venovcevs, Anatolijs (University of Oulu; UiT: The Arctic University of Norway)

Abstract format: Oral

As pointed by Anna Tsing, following Donna Haraway, fungi are a companion species for their abilities to travel, create, co-evolve, and consume alongside their human companions. While providing humans with some of their greatest inventions – cheese, bread, alcohol, penicillin – they have also been a bane for buildings, heritage, and human health. Throughout all this, fungi have shown themselves to be vicarious and opportunistic cohabitants and consumers within anthropogenic spaces – they exist among and will continue to exist after their human roommates. Our present, once past, will become their food. The purpose of this presentation is to explore the more-than-human methods of investigating this metamorphosis by introducing a recently-funded contemporary archaeology postdoctoral research project focused on the fungal ecologies that emerge out of recent ruins. By drawing on ideas from neo-materialism, multispecies approaches, and heritage ecology alongside case studies from northern Norway, Finland, and Canada, the presentation will explore the question of what archaeology and heritage studies would look like if we took seriously the teachings of our fungal cohabitants. What would fungal-friendly heritage practices look like? What anxieties do mushrooms evoke regarding the heritage of recent toxic soil contamination? And ultimately, how do fungal transformations of the recent past make room for more-than-human livability in an increasingly anthropogenic world in the period that many have begun to refer to as the Anthropocene?

3 HERITAGE AS PHARMAKONIC SUBSTANCE - BELLADONNA, MUSHROOMS AND BEYOND

Abstract author(s): Butler, Beverley (University College London, Institute of Archaeology)

Abstract format: Oral

David Lowenthal’s text *The Past is a Foreign Country* is oft cited as the foundational text of heritage studies. The title of which is taken from L.P. Hartley’s *The Go-Between*. What interests me, and what I wish to centre in my paper, is how the latter text has an unexpected moment in it (not featured in Lowenthal’s work) in which the chief protagonist Leo – the ‘go-between’ – adopts the persona of a ‘magician’, and I would argue an occult pharmacologist. In this guise he engages in ritual behaviours, the creation of spells and in interventions that revolve around the procurement of certain pharmakonic substances – notably a belladonna plant – that promise to transform his situation.

From this point of origin, my paper connects Leo’s use of transformative ‘pharmacological substances’ – i.e. as either alternatively or simultaneously ‘poison-cure’ – to entanglements synonymous with ‘heritage questing’ as the search for heightened states of being and to curative-harmful interactions with other overtly pharmakonic substances such as mushrooms. I ground my paper in the intellectual work of Derrida and Stiegler and ultimately contextualise it in the realpolitik of Palestine as a particularly potent ‘heritage pharmacology’.

4 TREASURE MAPS TO THE PAST: FUNGI AS INDICATORS FOR LOST MATERIALS IN THE MICROARCHAEOLOGICAL RECORD

Abstract author(s): Reifarth, Nicole (Cologne Institute of Conservation Sciences, University of Applied Science Cologne) - Pümpin, Christine (Integrative Prehistoric and Archaeological Science, University of Basel) - Drewello, Ursula (Laboratory Drewello & Weißmann GmbH, Scientific Investigations for Art and Monument Conservation) - Drewello, Rainer (Institute for Archaeological Sciences, Monument Sciences and Art History, Otto Friedrich University) - Lochnit, Günter (Biochemical Institute, Justus-Liebig-University Giessen)

Abstract format: Oral

The identification of highly degraded wood, textiles, and other organic materials from archaeological contexts still poses a considerable challenge. Complex processes of decay – in which microbial activity plays a pivotal role – can lead to major structural changes, both at a macroscopic and molecular level. It is thus very often no longer possible to detect organic components by means of direct morphological or molecular comparisons with recent reference materials but only indirectly, by means of characteristic patterns of decay that systematically occur in particular materials. Studies on anthropogenic floor deposits in the Late Bronze Age Royal Tomb of Qatna (Syria) show that one of these patterns can be fungal remains. The heavy alteration of organic materials from the burial inventory asked for different analytical approaches, including micromorphological, physicochemical and biomolecular analyses. The results raise

complex taphonomic questions resulting from the interplay of human activities and post-depositional processes. On the borders between lost materials and fragile microstructures are fungal remains which indicate former wooden constructions, plaited mats, and textiles. These inconspicuous structures of ancient fungi can be likened to treasure maps that indicate components of the burial inventory that have so far been indeterminable.

5 EXCAVATING THE FUTURE? TOWARDS AN ARCHAEOLOGY OF GROWTH AND REGENERATION

Abstract author(s): Holtorf, Cornelius (Linnaeus University)

Abstract format: Oral

The potential for an archaeology of growth and regeneration first arose during an exploratory visit to the Iron Age site of our training excavation. The site of Gamla Skogsby—literally “Old Village in the Woods”—is surrounded by a lush greenery overwhelming the visitor. During the summer, the vegetation is so dense and abundant that it takes considerable effort to filter out ‘the archaeology’, requiring the archaeologist to try and ‘unsee’ what is dominant at the site, i. e. the rich growth of vegetation, to focus instead on slight elevations and patterns of meager stones. At Gamla Skogsby, various actants, capacities and processes are continuously regenerated in a continuing development. This includes natural processes represented by the rich flora, fungi and fauna of the site as well as human growth, skill training and the development of Archaeology itself. Whereas archaeology, traditionally, in the name of recovery, seeks to regain the past for the future, under the sign of regeneration, archaeology engages in processes of natural and cultural growth, now and in the future. In this perspective, nature and culture are united regarding the significance of creative transformation and renewal. The traditional focus in archaeology on the details of periods long past ought to be complemented by asking about the processes we are, and will be, part of as human beings living in the present. —Arguably, the archaeological project at Gamla Skogsby did not so much recover aspects of prehistory some one and a half millennia ago as engage with evidence from different periods from 220 million years ago onwards, including both the three weeks in 2021 during which a group of humans conducted fieldwork, and the future.

380 NEANDERTHALS OF THE NORTH: AGENCY, ECOLOGY AND CLIMATE IN CHALLENGING LANDSCAPES [PAM]

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Di Maida, Gianpiero (CCEHN – Niedersächsisches Landesamt für Denkmalpflege) - Ruebens, Karen (Chaire de Paléoanthropologie, Collège de France) - Wiśniewski, Andrzej (Institute of Archaeology, University of Wrocław) - Weiß, Marcel (Institut für Ur- und Frühgeschichte, Friedrich-Alexander-Universität Erlangen-Nürnberg)

Session format: Regular session

While the first Neanderthal fossils were discovered in western Europe, their archaeological and biological remains have now been found across a broad geographic range, covering most areas of the Eurasian continent, including latitudes up to 53 degrees North. Neanderthals also were around over a relatively large time span, from ca. 400,000 to 40,000 years ago, covering several climatic oscillations. Consequently, it is clear that Neanderthals lived across a plethora of different environmental conditions, as well as radically different and challenging climates, and resilience-testing landscapes.

The scope of this session is to bring together case studies, local and supra-regional overviews, new discoveries and upcoming research projects focused on Neanderthal settlement strategies across the most challenging conditions in Northwest and Central Europe (covering the area from northern France into Poland, and from Britain down to the Alps). The session has a particular focus on the interactions between environment and material culture, including coping mechanisms, adaptive behaviours and innovative strategies. We especially encourage the submission of papers with an interdisciplinary approach, integrating data from lithic, faunal and environmental records, both from new excavations and from existing museum collections.

1 THE POTENTIAL OF ZOOARCHAEOLOGY BY MASS SPECTROMETRY (ZOOMS) TO ENHANCE RECONSTRUCTIONS OF NEANDERTHAL SUBSISTENCE STRATEGIES IN NORTHERN ENVIRONMENTS

Abstract author(s): Ruebens, Karen (College de France) - Smith, Geoff (University of Kent)

Abstract format: Oral

Numerous Neanderthal sites are known from northwest and central Europe (from northern France into Poland, and from Britain down to the Alps), up to latitudes of 51 degrees north. Besides covering a broad temporal range from ca. 400,000 to 40,000 BP, Neanderthals also encountered a range of climatic and environmental conditions. Zooarchaeological studies indicated they adapted their subsistence to both temperate forested settings (including for example fallow deer and straight-tusked elephants), as well as cold open landscapes (as represented by reindeer, mammoth and woolly rhinoceros).

These zooarchaeological identifications can now be enhanced through the application of Zooarchaeology by Mass Spectrometry (ZooMS). Through differences in collagen fingerprints ZooMS is able to taxonomically identify small bone fragments, which lack species-specific morphological features. In this presentation we will explore the potential of this method to enhance reconstructions of late Neanderthal subsistence strategies in northern environments. Firstly, we will discuss the results of our recent ZooMS analysis of 761 bone fragments from the Neanderthal open-site of Salzgitter-Lebenstedt (northwest Germany). Secondly, we will contextualise our results with other ZooMS studies that have been conducted on Northern Neanderthal sites. Finally, we will discuss the broader potential and pitfalls of integrating ZooMS and zooarchaeological data to understand human subsistence adaptations to challenging environmental conditions.

2 THE GATE TO THE NORTHERN LOWLANDS IN THE MIDDLE PLEISTOCENE: NEW RESEARCH AT THE SITE RACIBÓRZ STUZIENNA 2, SW POLAND

Abstract author(s): Wisniewski, Andrzej (Institute of Archaeology, Faculty of Historical and Pedagogical Sciences, University of Wrocław) - Schunk, Lisa (Institute of Archaeology, Faculty of Historical and Pedagogical Sciences, University of Wrocław; TraCER. Laboratory for Traceology and Controlled Experiments. MONREPOS Archaeological Research Centre and Museum for Human Behavioural Evolution, LEIZA) - Weiss, Marcel (Institut für Ur- und Frühgeschichte, Friedrich-Alexander-Universität Erlangen-Nürnberg) - Salamon, Tomasz (Institute of Earth Sciences, University of Silesia in Katowice) - Moska, Piotr (Institute of Physics/Division of Geochronology and Environmental Isotopes, Silesian University of Technology) - Lisa, Lenka (Institute of Geology, Czech Academy of Sciences)

Abstract format: Oral

Exploring the time of occupation as well as the technological traditions of human groups arriving in the European Lowlands during the Middle Pleistocene is a focus of many current discussions. The period of diminishing the Lower Paleolithic industries and the emergence of the Middle Paleolithic between MIS11 and MIS7 is of particular importance. It is assumed that the Lower Paleolithic in this region was represented by human groups using flake industries with a low degree of reproducibility and limited core preparation, while the beginnings of the Middle Paleolithic are linked to the emergence of predetermined technologies in the form of Levallois methods.

The Racibórz-Stuzienna 2 site has played a significant role in these considerations since its discovery in the 1930s. It is located in the Oder River valley at the entrance of the Moravian Gate (SW Poland), which is one of the largest passages connecting the lowland and upland-mountain parts of Central Europe.

The lithic finds were discovered within a sand and gravel pit. The artefacts were initially classified as Lower Palaeolithic, followed by an early Middle Palaeolithic interpretation of the lithics.

In 2022, we started excavations in the eastern part of the former pit (National Science Centre, grant no. 2020/39/B/HS3/02277). Thus, we would like to present new data regarding geological, soil micromorphology and radiometric examination determining the sedimentological environment and its age by OSL dates. Additionally, we present the results of a technological and traceological analysis of lithic finds.

The new artefacts occurred in a large quarry area, at least in two layers of fluvial deposits, representing several stages of human activity. Based on the lithic analyses, it appears that flakes and occasionally blades were manufactured using a unidirectional and centripetal method of core reduction. We also noted the presence of uni- and bifacial tools.

3 NEANDERTHALS LIVED UNDER SEVERE COLD CONDITIONS (GS 19) IN LICHTENBERG, NORTHERN GERMANY

Abstract author(s): Weiß, Marcel (Institut für Ur- und Frühgeschichte, FAU Erlangen-Nürnberg) - Hein, Michael - Urban, Brigitte (Leuphana University Lüneburg, Institute of Ecology) - Lauer, Tobias (University of Tübingen, Department of Geosciences, Terrestrial Sedimentology)

Abstract format: Oral

The resilience of Neanderthals towards changing climatic and environmental conditions, and especially towards severely cold climates in northern regions of central Europe, is still under debate. One way to address this is to investigate multi-layered occupation in different climatic intervals, using independently-compiled paleoenvironmental and chronological data. Unfortunately, most open-air sites on the northern European Plain lack a robust chronostratigraphy beyond the radiocarbon dating range, thereby often hampering direct links between human occupation and climate. Here we present the results of integrative research at the Middle Paleolithic open-air site of Lichtenberg, Northern Germany, comprising archaeology, luminescence dating, sedimentology, as well as palynological analyses. Our findings clearly show Neanderthal presence in a temperate, open-forest environment at the very end of the Brörup Interstadial, MIS 5c/GI 22 (Lichtenberg II). For the previously known Neanderthal occupation Lichtenberg I, we revise the chronology from the former early MIS 3 (57 ± 6 ka) to early MIS 4/GS 19 (71.3 ± 7.3 ka), with dominant cold steppe/tundra vegetation. The early MIS 4 occupation suggests that Neanderthals could adjust well to severely cold environments and implies recurring population in northern Central Europe between MIS 5 and MIS 3. Furthermore, the artefact assemblages differ between the temperate and cold environment occupations regarding size, blank production, typology and tool use. We argue that this change and can partially be explained by different site functions, as well as by the availability of large and high-quality flint raw material during periods of open landscapes, when the primary source of raw materials from nearby glacial sediments was accessible.

4 THE EARLY MIDDLE PALAEOLITHIC PEOPLING IN NORTHERN GERMANY: A REVIEW

Abstract author(s): Di Maida, Gianpiero (Niedersächsisches Landesamt für Denkmalpflege)

Abstract format: Oral

Due to its latitude, the Middle Palaeolithic (MP) peopling of northern Germany has been heavily influenced by the glacial transgressions during the cold phases (Saalian, MIS8 and MIS6, and Weichselian, from MIS5d to MIS4), with what seem to be demographic peaks during the interglacial phases. According to a recently-published summary (2016), more than the half of the German MP sites in the record are to be attributed to the MIS3.

It is therefore a matter of ongoing debate if and how many of the known sites in the region are truly ascribable to the Saalian glacial. The classification of the techno-complexes of the German and European MP, that has traditionally constituted the basis for its chronological systematization, have been plagued by constitutive and interpretative issues that have contributed to an overall picture now from many sides recognized to be distorted and generally unsatisfactory. This aspect has gained a visible predominance in the recent literature, as shown by the spike in the attempts to arranging the known facts and proposing new interpretative models. Despite these attempts though, the overall picture remains very fluid, with environmental aspects gaining more relevance in the way they are thought to have shaped and influenced the composition of the different techno-complexes.

A blatant example of this, is the site of Ochtmissen, attributed to the MIS6, with a proposed age of 150 ka BP (maximum Saalian), based on the typological attribution of the complex (Jungacheuléen) and an interpretation of the glacial/interglacial sequences.

In the frame of the project Climate Change and Early Humans in the North (CCEHN), our team aims for a critical re-evaluation of the MP sites in northern Germany and their chronological attribution within the frame of changing climatic conditions and by establishing comparisons with the neighboring regions.

5 MIDDLE PALAEOLITHIC ARTEFACTS FROM BEACH REPLENISHMENTS IN THE NETHERLANDS AND THEIR IMPLICATIONS FOR THE STUDY OF NORTHERN NEANDERTHALS

Abstract author(s): Niekus, Marcel (Stichting STONE/Foundation for Stone Age Research in the Netherlands; Human Origins Group, Faculty of Archaeology, Leiden University)

Abstract format: Oral

The North Sea harbours a vast archive of prehistoric archaeological, faunal, and other environmental remains and is considered one of the most important areas for the study of the early colonisation and occupation of Northwest Europe and the adaptation of prehistoric hunter-gatherers to changing environmental conditions. Although the scientific potential of the region for the study of Palaeolithic hunter-gatherers is generally acknowledged, targeted archaeological research is still rare due to a.o. reasons the poor accessibility of the submerged Pleistocene landscapes of this European 'heartland'. Most finds from the North Sea are single finds that are poorly contextualised and hence

often considered as being of limited scientific value. This mindset has however changed profoundly during the past decades and the scientific as well as public interest in submerged Stone Age archaeology is on the rise. This is largely the result of regular replenishments for coastal reinforcement and several large-scale infrastructural works that have led to numerous Stone Age finds made by an enthusiastic community of citizen scientists. In addition, increasing offshore economic activities and the application of new technologies have led to seismic and augering data providing well-needed contextual information on these finds. Although Middle Palaeolithic finds are reported from beaches all along the Dutch coast, there are notable differences between replenished collections with respect to numbers, raw material, and techno-typological characteristics. In this contribution I will focus on the lithic assemblages (MIS 5 – MIS 3) of two major infrastructural works: Maasvlakte 2 (Rotterdam) and the Sand Motor off the coast of Ter Heijde, not far from The Hague. Despite all the shortcomings and interpretative limitations of replenished finds, they provide information on the nature of the Late Pleistocene archaeological record of the Southern North Sea basin and hominin behaviour along the northwestern edge of the known Neanderthal distribution.

6 LAND WITHOUT CAVES. A LATE NEANDERTHAL LANDSCAPE RICH IN BIFACIAL TOOLS AT ESBEEK-DIESSEN, SOUTHERN NETHERLANDS

Abstract author(s): Rensink, Eelco - De Kort, Jan-Willem (Cultural Heritage Agency of the Netherlands) - Gisbergen, Piet (local archaeologist) - Huisman, Hans - Os, Bertil (Cultural Heritage Agency of the Netherlands) - De Smedt, Phillippe - Verhegge, Jeroen (Ghent University)

Abstract format: Oral

Since 2006 almost 4000 Middle Palaeolithic stone artefacts, including more than 250 (fragments of) bifacial tools, have been collected from arable fields between the villages of Esbeek and Diessen in the southern Netherlands. The small bifaces and Keilmesser among the surface finds date the sites to the period of the Neanderthals (Late Middle Palaeolithic). Between 2018 and 2022 borehole surveys were carried out and trial trenches were excavated by the Cultural Heritage Agency of the Netherlands to assess 1) the (original) stratigraphical position of the stone artefacts at the present-day surface, and 2) the potential of the area for the presence of in situ occurrences of (concentrations of) Middle Palaeolithic artefacts. Furthermore, the aim of the research is to reconstruct the Neanderthal landscape during the Middle Pleniglacial between about 55.000 and 40.000 years ago. In addition, the question of how to interpretate the large number of surface finds in terms of Neanderthal behavior and adaptation to 'marginal landscapes' and northern environmental conditions (site location, raw material provenance and use, nature of activities performed, settlement strategies, etc.) is addressed.

In our presentation we will focus on the preliminary results of the fieldwork in the spring of 2022. A small trial trench has been excavated in a Middle Palaeolithic artefact concentration consisting of hundreds of surface finds, yielding for the first time stone artefacts in a stratigraphical context below the ploughzone. Alongside discussing these results, we present the outcomes of the geophysical surveys, aimed at contextualizing the artefactual remains, and providing information on the palaeo-landscape and stratigraphy of the site.

A. CLIMATE NICHE DYNAMICS OF NEANDERTHALS IN WESTERN EURASIA

Abstract author(s): Yaworsky, Peter - Hussain, Shumon (Aarhus University) - Nielsen, Trine (Aarhus University; Moesgaard Museum)

Abstract format: Poster

Neanderthals occupied western Eurasia between 350-40kya, roaming a diversity of ever-changing landscapes through multiple cycles of extreme climate change. Based on the distribution of Middle paleolithic sites, the geographic range of Neanderthals generally expanded during warm phases and contracted during cold phases. These rhythmic climate oscillations are identified in the marine isotope stages and offer a framework to understand Neanderthal land use patterns and their response to climate change. A key issue in Neanderthal research is to what extent Neanderthal populations expanded into northern latitudes, particularly those above 55°N, and what conditions facilitated such range expansions. The Eemian Interglacial (MIS 5e. 130-116kya) is often identified as a context of substantial Neanderthal range expansion, with an increasing number of Middle Paleolithic sites reflecting Neanderthal occupation of the North- and East European Plain and the possibility of expansion even further north above 55°N. However, more recent glacial expansion periods, such as the LGM, have erased many, if not all, archaeological evidence of Neanderthal occupation in the northern latitudes. A promising way of quantifying the potential extent of the Neanderthal distributions is by understanding the climatic niche space of Neanderthals using a spatiotemporal species distribution model. Here, using dated Neanderthal sites from across western Eurasia, paleoclimate reconstructions, and a spatiotemporal species distribution model, we test the impact climate changes had on the size and extent of the Neanderthal niche space. Then, using this niche space, we estimate the peak extent of the Neanderthals into northern latitudes.

LINKING DIFFERENTLY: COMPLEX BEHAVIOURAL PATTERNS EVOLVING FROM PREHISTORIC NETWORKS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Jiménez-Puerto, Joaquín R (Departamento de Prehistoria, Arqueología e Hª Antigua) - Diachenko, Aleksandr (Institute of Archaeology, National Academy of Sciences of Ukraine) - García Puchol, Oreto (Departamento de Prehistoria, Arqueología e Hª Antigua)

Session format: Regular session

Non-linear behavioural dynamics evolving from network structures is one of the most prominent research topics explaining patterns in material culture at different spatio-temporal scales. Prehistoric networks were shaped, re-shaped and collapsed through long periods of time across wide geographic areas. Theoretical and methodological approaches to networks and complexity are intensively developed in archaeology and anthropology. 'Metaphoric' applications are being replaced by quantitative approaches. At this point, numerous computational tools developed under this epistemological umbrella,

This session focuses on networks cases of applications and the tools involved in their implementation. It also aims to provide an overview of the state of the art, recent advances, and further directions in studying complex systems and networks in prehistory. We invite contributions from all archaeology-related disciplines dealing with the following questions:

- Case studies on complexity and network analysis in prehistory.
- What are the differences between the features of hunter-gatherer's social networks and those characteristic of Neolithic societies?
- How simulations of the emergent phenomena in a diachronic perspective can contribute to the understanding of transformations associated with landscape and social endeavours?
- Is implementing complexity theory and network analysis into research programs justified in case of simple explanatory alternatives?
- What is the overall impact of complexity theory and network analysis on the development of method and theory in archaeology and anthropology?
- Is this methodology just a short-term hype or has it come to stay?
- What is the impact of chronological resolution on the observed patterns? Do they still contain the potential to perform further applications, being squeezed to the very last drop?
- Epistemological approaches have the potential to provide a theoretical framework to the analytical results obtained, but they still lack of a unified corpus. Could all these approaches be integrated under the umbrella of a unified paradigm for network studies?

ABSTRACTS

1 DISSECTING THE CONFORMIST AND ANTI-CONFORMIST BIASES IN CULTURAL TRANSMISSION

Abstract author(s): Diachenko, Aleksandr (Institute of Archaeology, National Academy of Sciences of Ukraine) - Sobkowiak-Tabaka, Iwona (Faculty of Archaeology, Adam Mickiewicz University in Poznan)

Abstract format: Oral

A spread of cultural traits along the contact networks is affected by frequency-dependent transmission biases. Positive (or conformist) transmission bias refers to the disproportionately high probability of acquiring the more common variant. Negative (or anti-conformist) transmission bias describes the deliberate exclusion of the most common ('fashionable') variants in the copying process. Both the conformist and anti-conformist biases have been intensively considered in mathematical models of cultural transmission and data analysis for almost four decades.

The main focus of this study is the relationship between transmission biases and the level of the analyzed phenomena in the taxonomic structure. A brief review of the research dealing with the frequency-dependent transmission biases is followed by the analysis of the network structure impact on the observed trends in a conformist and anti-conformist transmission of cultural traits. Our 'toy' models and empirical examples aim to contribute to the understanding of prehistoric processes beyond the observed trends.

2 WEAPONS, DATES, AND SOCIAL NETWORK ANALYSIS: REVEALING POTENTIAL INTERACTIONS ACROSS THE MESOLITHIC AND THE EARLY NEOLITHIC IN THE WESTERN MEDITERRANEAN

Abstract author(s): Barrera-Cruz, María (University of Valencia) - Cortell-Nicolau, Alfredo (University of Cambridge) - Jiménez-Puerto, Joaquín - García-Puchol, Oreto (University of Valencia)

Abstract format: Oral

Geometric points are highly frequent in the last phases of the Mesolithic and first Neolithic techno-complexes. Focusing on these assemblages, diversity in geometric shapes (trapezoids, segments, triangles) is visible between regions and over time. Does it happen due to changes in the social network? What kind of social interactions could be addressed by changes in the geometric points assemblage? This work tries to describe and compare Mesolithic and Neolithic interaction patterns from variability in this tool using social network analysis. We wonder whether potential economic and social behavior differences between groups with different subsistence systems (hunter-gatherers versus farmers) might have affected how these groups produced and used this toolkit. To do this, we rely on a paradigmatic classification to create types or groups defined as a unique combination of technical and morphological traits where all the variables and categories are equally important. Once this is done, we will use the frequencies of these groups across different dated layers, where samples will be chronologically grouped. Social network analysis will be carried out in a diachronic axis, following criteria of similarity and considering Mesolithic and Neolithic assemblages. In this way, we hope to contribute to the understanding of (1) the variability in the geometric points toolkit considering different economic and social behaviors from the last hunter-gatherers and early farmers and (2) test whether network analysis can be used in cultural diversity studies under conditions of data scarcity.

3 DOLERITE PROCUREMENT IN MEDITERRANEAN IBERIA AND THE USE OF NEURAL NETWORKS

Abstract author(s): Bernabeu Auban, Joan - Jimenez-Puerto, Joaquin - Gallelo, Gianni - Orozco-Köhler, Teresa (Universitat de Valencia)

Abstract format: Oral

Provenance information results are useful to study settlement patterns, investigate stone tool technologies and enabling the re-enactment of stone transportation networks. These networks can be an indicator of the increasing level of complexity that societies presumably present in the Southeast of the Iberian Peninsula during the Neolithic and Chalcolithic phases. As a first step to reach this goal, a new methodology based on the mineral analysis determination has been developed. Dolerite, raw materials and archaeological lithic materials, from the Mediterranean region of the Iberian Peninsula were analysed by pXRF and chemical elemental data obtained to identify their provenance. Neural networks employing Self Organised Maps (SOM), are suitable to deal with multidimensional representations and map them in a two-dimensional space of neurons, following an unsupervised learning protocol. This statistical method first enabled the evaluation of the elemental markers related to each dolerite outcrop and then the composition of rocks that were associated to lithic artefacts depending of their elemental features. The results showed that in most cases the distribution and dispersion of the chemical profile depend on the outcrops, and suggest that is pivotal to first identify the dolerite raw material elemental markers, being the prior step to create a calibration set to classify archaeological lithic materials following a supervised learning protocol. This calibration set would be used to “train” newer samples datasets in order to classify them correctly in a more accurate way.

4 FOLLOWING COMPLEXITY THROUGH BELL-BEAKER DECORATIVE PATTERNS

Abstract author(s): Jiménez-Puerto, Joaquín R - Escribá Ruiz, Pilar (Departamento de Prehistoria, Arqueología e Historia Antigua de la UVEG) - Molina Balaguer, Lluís (Departamento de Prehistoria, Arqueología e Hª Antigua)

Abstract format: Oral

Many questions about Bell-Beaker period remain unknown in Mediterranean façade of the Iberian Peninsula. Calibration curve uncertainty, together with the low density of well known archaeological contexts contribute to the mystery. Traditionally it has been considered that the so-called “International styles” belong to an early phase, related with a more homogeneous and stable moment; meanwhile the Incised-impressed vessels are included in a later period, probably involved in a fragmented relational situation. However both can be found together in sites with apparently same chronology, making really difficult to make clear chronologic attributions, the social situation of the associated communities or the complexity evolution. In this work we will try to tackle this issue on a dual perspective: carrying out an analysis of the symmetry which can be found in the bell-beaker vessels decorative patterns and linking them through similarity patterns in relational networks, which will be analyzed later with SNA tool.

5 SOCIAL NETWORK ANALYSIS AND GIS TECHNIQUES TO APPROACH SOCIAL COMPLEXITY IN THE CASE OF THE AMAZONIAN GEOGLYPHS

Abstract author(s): Diez Castillo, Agustín (Universitat de València)

Abstract format: Oral

In this communication, we aim to study the so-called Amazonian Geoglyphs using Geographical Information Systems -GIS- techniques and Social Network Analysis -SNA-. These earthen structures were mostly discovered in the present century as a result of Amazonian deforestation. The exact number of these structures is uncertain due to the fact that some have not been physically verified. Nevertheless, we are faced with a phenomenon of hundreds of monumental structures. To date, a clear chronological framework is lacking due to the limited number of available dates. We present a combination of classical GIS techniques (LCP, SCA) and Social Network Analysis to test various hypotheses about the evolution of the geoglyphs. The interconnectedness of these structures is crucial to understanding how the groups residing in the area navigated the anthropogenic landscape through physical paths across various socio-ecological scenarios over several millennia. Social complexity was developed around these earthworks, as evidenced by the intricate network of communities.

382 BREAKING THE BARRIERS. TRACING PALAEOLITHIC HUMAN MOBILITY ACROSS MOUNTAINOUS ENVIRONMENTS [PAM]

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Calvo, Aitor (Seminari d'Estudis i Recerques Prehistòriques - SERP, University of Barcelona - UB; Institute of Archaeology of the University of Barcelona - IAUB; Department of Geography, Prehistory and Archaeology, University of the Basque Country - UPV/EHU) - Deschamps, Marianne (CNRS, TRACES - UMR5608, Maison de la Recherche; UNIARQ, Centro da Arqueologia da Universidade de Lisboa) - Alcaraz-Castaño, Manuel (Area of Prehistory, Department of History and Philosophy, University of Alcalá)

Session format: Regular session

Traditionally, mountains have been considered impassable barriers for past human populations, especially during the most climatically and environmentally severe episodes of the Pleistocene. In addition, the harsh conditions that are inherent to most of these altitude environments, including highland plateaux, led archaeologists to underestimate them as potential occupation zones in many cases. As a consequence, for many years our interests and efforts turned away from these regions in favour of more “optimal” contexts, such as valleys and coastal areas.

However, the development and spread in the last decades of studies on human mobility has changed our view of the Palaeolithic territoriality and mobility patterns. The transit routes resulting from these new approaches have showed that mountain environments were not only viable areas (with at least a rich seasonal exploitable biotope) for Palaeolithic hunter-gatherers, but also more or less frequent transit regions in different situations during the Pleistocene.

The subsequent growing importance of these contexts in Archaeology is reflected in the proliferation of research projects, work groups and publications devoted to the study of how prehistoric humans settled and crossed mountainous landscapes. This session aims to become a new step in this trend, being a scientific forum for the discussion on the role of mountainous environments in relation to the patterns of mobility, territoriality, settlement and subsistence of Palaeolithic human groups. It will encompass works with a main focus on mobility across (or in relation to) mountainous and highland regions throughout the Pleistocene, including from broad material-based studies on mobility to more specific GIS-based analyses, through those grounded in environmental or ethnological data. Finally, this session has a global scope and has no restrictions concerning topography, biotopes or climates.

ABSTRACTS

1 THE MOUNTAIN BARRIER? THE QUESTION OF CULTURAL CONTINUITY ON THE PYRENEAN SLOPES DURING THE MIDDLE PLEISTOCENE

Abstract author(s): Viallet, Cyril (Paléotime; UMR 7194 - Histoire Naturelle de l'Homme Préhistorique) - Fernandes, Paul (Paléotime; UMR 8068 - TEMPS) - Rué, Mathieu (Paléotime; UMR 5140 - ASM) - Tallet, Pascal (Paléotime)

Abstract format: Oral

At the transition between the Middle and Upper Pleistocene, the techno-complexes of south-western France are characterised by the use of Pyrenean quartzites collected in secondary positions in the Garonne alluvium. These raw materials were exploited following S.S.D.A. (algorithmic) and Discoid reduction processes associated with shaping chaînes opératoires geared towards the production of bifaces, unifaces, picks and cleavers.

Intra-site comparisons at local, regional and extra-regional scales show that these assemblages display more affinities with those of the Iberian Peninsula and North Africa, than with neighbouring regions to the north of the Pyrenean chain. Moreover, these lithic assemblages are present from the Lower Pleistocene onwards in North Africa and from the second half of the Middle Pleistocene in the Iberian Peninsula, whereas they are dated to the end of the Middle Pleistocene in southwest France.

The Cassé archaeological site at Cornebarrieu (Haute-Garonne, France), excavated in 2020, provides new data on the lithic chaînes opératoires used for these techno-complexes of the northern Pyrenean piedmont. Combined radiometric and taphonomic data and a detailed analysis of the production sequences clarify the overall techno-cultural context of the site. The aim here is to assess the influence of raw material selection on production and to discuss the importance of this parameter on the perceived affinities between assemblages north and south of the Pyrenean chain. These results have a direct impact on the perception of techno-cultural transfers between France and the Iberian Peninsula, and even with North Africa, during the Middle Pleistocene.

2 LAND AND ROCKS IN THE SOUTHERN PYRENEES. THE ROCA SAN MIGUEL MIDDLE PALAEO-LITHIC SITE

Abstract author(s): Shveygert, Ekaterina - Marco, Sonia - García-Simón, Luis (University of Zaragoza)

Abstract format: Oral

In the Iberian Peninsula, Marine Isotopic Stage 5 (MIS) can be fully considered as a part of the Late Middle Palaeolithic phase. In contrast, little is known concerning MIS 6 industries which are regarded as the moment of disappearance of the Late Acheulean and the co-existing European Ancient Middle Palaeolithic in this area. In this context, Roca San Miguel is a site located on the right bank of the Noguera Ribagorzana river, in the mountainous environment of the Pre-Pyrenees of Huesca (Spain). It has delivered an important archaeostratigraphic sequence related to MIS 6 and 5. As known, MIS 6 represents a glacial stage while MIS 5e is the optimum climatic event of the whole interglacial MIS 5. This should have reflected some abrupt changes concerning environmental data. The adaptative response of human population to these changes still need to be evaluated.

In this paper we propose to analyse an industry sample from two layers dated to MIS 6d and to MIS 5c/d. The strategies of lithic technological organisation, including raw material exploitation patterns, production systems, and blanks management will be analysed in the aim to identify similarities and changes in the territories exploitation between these different occupations phases. For that we have realised a petrographic analysis - including a macroscopic and a microscopic analysis (through petrographic thin section) of a sample from both layers and a technological study of the lithic assemblage to reconstruct the operative chains.

The technological study combined with the raw material analysis will provide us significant data, which will lead us to propose some hypotheses about the adaptation to the pre-Pyrenean environment of two strongly different climatic phases and the mobility patterns of the inhabitants of the Roca San Miguel site during the Middle Palaeolithic.

3 FAR OVER THE MISTY MOUNTAINS. NEANDERTHAL MOBILITY IN THE MASSIF CENTRAL DURING THE EARLY GLACIAL

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Abstract format: Oral

The Massif Central in France has a varied topography made up of mid-mountain plateaus, summits and valleys. For a long time, it was perceived as a restrictive environment that strongly limited human settlement and movements except during phases of clear climatic improvement. However, from a strictly geographical point of view, this area occupies a 'strategic' position between three large archaeological areas rich in numerous sites: to the west the Aquitaine Basin, to the east the Rhône Valley and to the north the southernmost parts of the Paris Basin.

Here we propose to address the dynamics of circulation of Middle Palaeolithic human groups within this area, based on the analysis of lithic industries from the Baume-Vallée site (Haute-Loire). This context provides a stratigraphic sequence in which several units could represent a recurrence of occupations during a time lapse tentatively estimated to MIS 5 and the beginning of MIS 4. It thus makes it possible to question the evolution of Neandertal circulations over time and to discuss the southern Massif Central role within the Middle Palaeolithic palaeogeography during the Early Glacial period.

4 BREAKING BARRIERS IN THE PYRENEES. PALAEO-LITHIC SETTLEMENT AND MOBILITY IN THE WESTERN PYRENEAN MOUNTAIN RANGE

Abstract author(s): Calvo, Aitor (Seminari d'Estudis i Recerques Prehistòriques - SERP, University of Barcelona - UB; Institute of Archaeology of the University of Barcelona - IAUB; Department of Geography, Prehistory and Archaeology, University of the Basque Country - EHU/UPV) - Minet, Théo (CNRS, TRACES – UMR 5608, Maison de la Recherche) - Deschamps, Marianne (CNRS, TRACES – UMR 5608, Maison de la Recherche; UNIAHQ, Centro da Arqueologia da Universidade de Lisboa) - Anderson, Lars (Département d'Anthropologie, Université Paris Nanterre; CNRS, TEMPS – UMR 8068, MSH Mondes, Bâtiment René Ginouvès) - Arrizabalaga, Alvaro (Department of Geography, Prehistory and Archaeology, University of the Basque Country- EHU/UPV)

Abstract format: Oral

As was often assumed to be the case for mountainous and other mid to high altitude areas, for many years the Pyrenees were considered to be an inhospitable milieu for human Palaeolithic populations. As such, altitude has often been considered among the determinant factors for influencing human settlement, shifting regional archaeologists' focus away from mid to high altitude areas. However, growing evidence, via the discovery of new karstic and open-air sites in these contexts, has progressively begun to dismantle this assumption. These new indicators underline that mountainous or mid to high altitude environments were inhabited and/or traversed by human populations during different moments throughout the Palaeolithic. This becomes especially relevant when contrasted with the so-called Txingudi corridor, a coastal corridor that may have facilitated passage between both sides of the western Pyrenees.

This presentation aims to highlight the evidence that points 1) to settlements in mountainous or mid to high altitude environments, and 2) to the traversal of mountain passes in the western Pyrenees. In the former case, sites contain evidence for a degree of functional specialization (such as the acquisition of lithic resources or hunting), and in the latter, just served as places of passage along the aforementioned mountain routes. Lithics are the most relevant evidence for exploring these questions, especially in regards to lithic raw material procurement patterns, as the presence of northern or southern-Pyrenean resources in sites located in the foothills on either side suggests multiple routes connecting both. Moreover, petrographic analyses indicate variable movements in both directions (north-south and vice versa), and even hiatuses in said movements, across different phases of occupation. The exploration of these patterns across several key Middle and Upper Palaeolithic sites will provide an interesting laboratory for examining questions pertaining to mobility and broader scale population dynamics in the region.

5 SUBSISTENCE STRATEGIES IN THE IBERIAN PLATEAU: ZOOARCHAEOLOGY OF LA MALIA ROCK SHELTER

Abstract author(s): Téllez Peñaranda, Edgar (Centro Nacional de Investigación sobre Evolución Humana - CENIEH) - Rodríguez-Hidalgo, Antonio (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Rodríguez-Almagro, Manuel (Centro Nacional de Investigación sobre Evolución Humana - CENIEH) - Pablos, Adrián (Departamento de Prehistoria y Arqueología, Facultad de Geografía e Historia, Universidad de Sevilla; Centro Mixto UCM-ISCIH de Investigación sobre Evolución y Comportamiento Humanos; Centro Nacional de Investigación sobre Evolución Humana - CENIEH) - Sala, Noemi (Centro Nacional de Investigación sobre Evolución Humana - CENIEH; Centro Mixto UCM-ISCIH de Investigación sobre Evolución y Comportamiento Humanos)

Abstract format: Oral

Traditionally, the specialized literature suggests that the interior of the Iberian Peninsula was sparsely populated or even completely unpopulated during the Upper Paleolithic (UP). The orographic characteristics and the altitude of the Castilian Plateau, would have exacerbated the already challenging climatic conditions during the Last Glacial Period.

The Malia rock shelter (Tamajón, Guadalajara, Spain) represents a window into subsistence strategies, the exploitation of animal resources and human adaptation to the ecosystems of the high-altitude plateau. The site has been excavated since 2018, distinguishing 3 UP Lithostratigraphic Units (LU) subdivided in four levels dated between 20-37 ka cal BP. Here, we present the first zooarchaeological study of the site based on the analysis on 1260 faunal remains. *Cervus elaphus* is the best represented species in all the levels of the site, followed by *Equus* sp. in levels LUIII and LUIV_a. *Leporidae* is also abundant in levels LUIV_b and LUV. However, other taxa such as *Bison priscus*, *Caprinae* or birds are less represented in the sequence.

If we look at the bone surface modifications, they indicate an anthropogenic origin of the assemblage. We found a high percentage of cut marks, anthropic breakage and burned bones. Anthropic processing has been documented mainly on red deer and horses in all the sequence, but also in leporids and bison. Carnivore tooth marks were scarcely documented in equids or red deer, but in greater proportion in leporids and birds. To sum up, humans seem to have concentrated their activity on macromammals, while the accumulation of birds and leporids seems to be more of a

carnivore accumulation. These results add a new dimension to the debate about the mobility and occupation of our species during this period.

6 MOUNTAIN VS. COASTAL SITES. SETTLEMENT AND MOBILITY PATTERNS DURING EVOLVED AURIGNACIAN IN THE CENTRAL IBERIAN MEDITERRANEAN BASIN

Abstract author(s): Eixea, Aleix - Martínez-Alfaro, Álvaro - Badal, Ernestina - Bel, Miguel (Universitat de València) - Martínez-Varea, Carmen (Universidad de Salamanca) - Real, Cristina (Universitat de València) - Sanchis, Alfred (Museu de Prehistòria de València, Servei d'Investigació Prehistòrica, Diputació de València) - Villaverde, Valentín (Universitat de València)

Abstract format: Oral

Due to the nature of its relief, the central Iberian Mediterranean basin has an outstanding contrast between the coastal lowlands and the mountainous hinterland. This characteristic fosters the existence of mountain sites and coastal sites in a small geographical area. In this study, we have selected the levels assigned to the Evolved Aurignacian from the altitude sites of Cova de les Malladetes (Barx, Valencia) and Abric de la Ratlla del Bubo (Crevillent, Alicante), as well as Cova Foradada (Oliva, Valencia) and Cova de les Cendres (Teulada-Moraia, Alicante) as examples of coastal sites.

Firstly, we analyse the botanical, faunal and lithic remains in order to assess the existence of divergences and similarities in the landscape, paleoclimatic conditions, resources exploitation and settlement patterns of the sites. Secondly, we use geographic information systems (GIS) to analyse the location of the sites in relation to the natural routes that connect the Mediterranean coast with the interior of the peninsula (East to West), as well as the corridors that link the territory longitudinally (North to South). We suggest possible circulation routes for the hunter-gatherer societies that inhabited the central Iberian Mediterranean region during the Aurignacian and we assess the relation between sites and raw material catchment areas.

In summary, the main objective is to find out how the location and biotopes of the sites influenced the occupation patterns and, finally, the possible circulation routes used by the Early AMH during the Aurignacian.

7 LONG-DISTANCE NETWORKS WITHIN AND BEYOND INLAND IBERIA DURING THE SOLUTREAN. PROCUREMENT STRATEGIES AND TRANSPORT OF CHERTS EXPLOITED AT PEÑA CAPÓN

Abstract author(s): Alcaraz-Castaño, Manuel (Área de Prehistoria, Universidad de Alcalá; MULTIPALEOIBERIA ERC project) - Sánchez de la Torre, Marta (Seminari d'Estudis i Recerques Prehistòriques - SERP, Universitat de Barcelona; Institut d'Arqueologia de la Universitat de Barcelona) - Mangado, Xavier (Seminari d'Estudis i Recerques Prehistòriques - SERP, Universitat de Barcelona; Institut d'Arqueologia de la Universitat de Barcelona) - Castillo-Jiménez, Samuel - Luque, Luis (Área de Prehistoria, Universidad de Alcalá; MULTIPALEOIBERIA ERC project) - Cuartero, Felipe (Centro Nacional de Investigación sobre la Evolución Humana - CENIEH) - Alcolea-González, José-Javier (Área de Prehistoria, Universidad de Alcalá; MULTIPALEOIBERIA ERC project) - Aubry, Thierry (Côa Parque, Fundação para a Salvaguarda e Valorização do Vale do Côa; UNIAHQ - Centro de Arqueologia Universidade de Lisboa, Faculdade de Letras) - Gratuze, Bernard (Institut de Recherche sur les Archéomatériaux - IRAMAT, CNRS & Université d'Orléans - UMR 7065)

Abstract format: Oral

Mobility strategies and social networking among Pleistocene hunter-gatherers, including raw material procurement strategies, are key topics in Palaeolithic archaeology. The Solutrean of southwest Europe (~25000-20000 calibrated years BP) is an outstanding case for studying human mobility and social networks within harsh environmental conditions, given its coincidence with the Last Glacial Maximum. However, little is known about these topics in the inland territories of the Iberian Peninsula, where research efforts have been traditionally sparse. Although it was assumed that humans avoided the Iberian hinterland during the coldest periods of the Last Glacial due to its relatively high altitude, harsh environments and climate variability, recent research has demonstrated that some interior regions were recurrently settled. Thus, investigating mobility patterns and networks connecting these regions with other areas, both within inland Iberian and beyond, is essential for understanding population dynamics and human-environment-climate interactions in southwest Europe during the LGM.

We present results on chert sourcing and mobility patterns of human groups occupying the Peña Capón rock shelter (central Spain) during the Solutrean, including routes potentially tracked for transporting or exchanging rocks. After a first macroscopic observation to define the main features of cherts, we conducted geochemical analyses to quantify their elemental chemical composition by means of Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS). This is an entirely non-destructive approach that allowed the preservation of archaeological remains. The statistical treatment of data has allowed connecting different archaeological chert types with a specific geological source. Then, we used GIS tools to establish the least cost routes potentially connecting the archaeological site with the chert sources. Results show that cherts exploited at Peña Capón come from a wide variety of regions, including

areas well beyond inland Iberia. This demonstrates the existence of long-distance contacts during the LGM, regardless of potential mountain and ecological barriers.

8 WHOSE TERRITORIES? WERE THE PYRENEES A BARRIER FOR THE PREHISTORIC OR ARE THEY FOR THE PREHISTORIANS?

Abstract author(s): Aubry, Thierry (Fundação Côa Parque) - Mangado Llach, Javier (Dep. d'Història i Arqueologia / Fac. Geografia i Història) - Almeida, Miguel (Dryas / Octopetala) - Walter, Bertrand - Peyrouse, Jean-Baptiste (SERAP Vallée de la Claise)

Abstract format: Oral

Since Leroi-Gourhan and Binford put Paleolithic within our grasp, understanding the hunter-gatherers' mobility, territories, and resource exploitation strategies became crucial and the Palaeolithic research focus wandered away from classical cave sites into the open territories that Palaeolithic men lived in.

Lithic raw material procurement studies introduced dynamics to our maps, as technology and spatial analysis did to intra-site space. Densified by multidisciplinary field surveys, territories gained life: wide catchment areas were documented not only by lithic raw-materials, but also by other objects (such as marine shells) and even concepts (as the compared analysis of Pleistocene rock-art came to prove).

Because of their complex technology and demanding raw material requirements, Solutrean is particularly adapted for these analyses, offering privileged case-studies across southwestern Europe:

- At the Maîtreaux site (France), allochthonous flints testify relationships within a vast territory surrounding the French Central Massif from southern Aquitaine to Eastern Saône, further corroborated by Solutrean flakes related to the Maîtreaux productions found at Petit-Guinards, in a region where no Solutrean occupation was previously known.
- In the Côa valley, incoming raw materials proceed from an equally wide territory, between the Upper Douro valley and the Atlantic shores.

Recent Iberian results indicate even wider contacts, possibly ranging beyond the Pyrenees, introducing a logistic research problem: palaeolithic catchment areas could be larger than our own research territories, thus limiting our ability to recognize these distant contacts.

9 RAW MATERIAL MOVEMENTS AND SHARING OF TECHNICAL TRADITIONS: NETWORKS BETWEEN RHÔNE AND MASSIF CENTRAL DURING THE UPPER PALEOLITHIC

Abstract author(s): Beauvais, Pierre-Antoine (Université Toulouse2-Jean-Jaurès; UMR 5608 TRACES) - Kherdouche, Arnaud (Université Paul Valéry Montpellier; UMR 5140 ASM) - Fernandes, Paul (SARL Paléotime; UMR 8068 TEMPS) - Monney, Julien (UMR 5204 EDYTEM) - Delvigne, Vincent (CNRS; UMR 8068 TEMPS) - Lafarge, Audrey (Association Archéo-Logis) - Raynal, Jean-Paul (UMR 5199 PACEA; INSAP)

Abstract format: Oral

The Rhône Valley and the Massif Central have traditionally perceived as bio-geographical constraints areas for Upper Paleolithic human groups: the Rhodanian furrow is think as a frontier since distinct technical traditions were defined on both sides of the river, and the Massif Central (especially the Velay) has long been considered a "dead end" for groups supposedly coming from northern areas.

Over the last 15 years, the silicite transfers recognized in archeological sites located in the Rhône Valley (Vivarais) and the heart of the Massif Central (Velay) by means of a petroarchaeological method based on the concept of the evolutionary chain, has made it possible to renew the appreciation of the mobility of prehistoric collectives at the end of the Upper Pleistocene.

Several of these assemblages have been historically attributed to the Magdalenian based on the technological and typological characteristics of their lithic and/or bone industries. If the prehistorians of the time had already noted certain similarities (R. de Bayle des Hermens, J. Combier), our revision of the lithic industries in the perspective of defining the degree of "technical similarity" confirms the existence, if not of a "tradition", at least of a sharing of know-how and behaviors on both sides of the northern Cévennes.

The regional approach adopted in this work allows us to emphasize the articulation of the different types of networks (material and ideal) observed today and linking middle montane sites and the Rhodanian corridor during the Upper Paleolithic.

EXPLORING PALAEO-LITHIC MOBILITY IN THE CENTRAL IBERIAN MOUNTAINS – A CELLULAR AUTOMATA APPROACH

Abstract author(s): Hewitt, Richard (Madrid Complutense University) - Morley, Mike (Flinders University)

Abstract format: Oral

This paper explores the potential of cellular automata to contribute to the study of Palaeolithic mobility in the mountain regions of central Iberia. Conventional cost-surface approaches are conceptually weak for modelling the movement of sentient agents, whose knowledge of their environment is likely to be incomplete, and who may seek only approximate least cost solutions within a local range. The DISPERSCA cellular automata model, programmed in the R environment, is presented. The model is applied to a 48000 km² area of the central Iberian mountain range (the Central System), in present-day Spain. Each simulated pathway began from a randomly selected point on the cell grid, representing a hunter-gather agent or group, around which a 1km cell neighbourhood was defined. The agent then moved to the lowest cost cell of the neighbourhood, as determined by a map of terrain slope, around which a new neighbourhood was defined. The process was repeated for 1000 iterations or until the agent reached the edge of the grid. Both hexagonal neighbourhoods and square “Moore” neighbourhoods were explored. Agents crossed the central mountains on few occasions, usually preferring to explore terrain on either north or south sides, confirming the importance of the range as a barrier to population dispersion. However, agents that did cross the range used well-known crossing points, proving, in principle, the functional utility of the model. Agents frequently roamed in circles or missed nearby obvious least-cost routes, because the local knowledge captured by the cell neighbourhood did not reflect better options beyond it. Such behaviour seemed to reflect the limitations of human perception in mountain terrain in a realistic way. Future developments could include suitability weights layers derived from the locations of known Palaeolithic sites, presumed or verified sources of water, or the movements of game animals.

386 CARVED FEATURES AND CARVED LANDSCAPES. INVESTIGATING THE TECHNICAL AND TOPOGRAPHICAL LINKS BETWEEN QUARRIES AND ROCK-CUT SITES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Sciuto, Claudia (University of Pisa) - Porqueddu, Marie-Elise (École des hautes études hispaniques et ibériques, Casa de Velázquez) - Lamesa, Anaïs (Institut Français d'Études Anatoliennes) - Morlegheem, Daniel (UMR 7324 Citeres-LAT)

Session format: Regular session

In the last ten years, an international exchange has been initiated amongst scholars on the methodological and theoretical challenges in the study of quarries and rock-cut sites. A lively community has been discussing the different approaches used for documenting and interpreting features that are generated in the liminal space between human lives and geologies.

The human activity of excavating geological outcrops results in features that are classified according to two main macro categories:

- rock-cut sites which are linked to the life and death of human beings – including dwellings, shelters, burials, and places of worship.
- quarries are mostly defined as production spaces in which technical solutions are aimed at optimizing the extraction of stone from the bedrock.

Despite the difference in the purpose of hewing, conceptual links exist between features carved in the rock. Similarities can be found in the techniques used for hewing as well as the management of waste and by extension, the same networks of knowledge and know-how transmission. Moreover, dwellings or evidence of places of worship have been found in quarries and blocks extracted from rock-cut sites are often used for construction elsewhere.

Quarries and rock-cut sites can often be found associated with the same outcrops, thus outlining a complex taskscape in which the interaction of human communities and bedrock can result in different carved features.

This session will be dedicated to investigating the connections between quarries and rock-cut sites on different scales. We invite contributors, particularly early careers researchers/scholars, working on different case studies, without chronological or geographical boundaries, to discuss:

- methods for mapping carved landscapes, highlighting the human and geological agencies in shaping a taskscape.
- the more detailed study of tool marks and techniques used for extracting stone blocks and carving specific elements, outlining systems of knowledge transfer in communities through time.

1 CARVING OUT THE SPACE. METHODOLOGICAL CHALLENGES IN BRIDGING THE STUDY OF ROCK-CUTTING TECHNIQUES AND LANDSCAPE ARCHAEOLOGY

Abstract author(s): Morleghem, Daniel (UMR 7324 Citeres-LAT) - Lamesa, Anaïs (Institut Français d'Études Anatoliennes) - Porqueddu, Marie-Élise (École des hautes études hispaniques et ibériques, Casa de Velázquez) - Sciuto, Claudia (University of Pisa)

Abstract format: Oral

Through an overview of the theoretical reflections and technological approaches that have characterised the study of quarries and rock-cut sites, this contribution aims to highlight the challenges in linking different scales of investigation and topographical and topological approaches to the study sites that are carved in the rock.

Two main categories of rock-cut sites will be taken into account: those which are linked to human beings, their life, death and religious practices; those which are related to stone extraction and therefore are associated with production and economy.

We will explore the entangled network of human lives and geologies in the intertwined usages of carved spaces. Although quarries and rock-cut sites are well identified, sometimes both categories intersect each other: rock-cut dwellings or evidence of rock-cut worshipping places have been found in quarries and blocks extracted from rock-cut sites are often used for construction elsewhere.

Similarities can be found in the techniques used for carving and crafting an architecture as in shaping a block, in managing the waste. By extension, we can acknowledge the same networks and transmission of know-how. Quarries and rock-cut sites can be found associated with the same outcrops, thus outlining a complex taskcape in which the interaction of human communities and bedrock can result in different carved features.

2 TRACKING FUNERARY PRODUCTION OVER THE ANALYSIS OF CARVING TOOLS. THE CASE OF MENORCA'S ISLAND (BALEARIC ISLANDS, SPAIN)

Abstract author(s): Carbonell Pastor, Sonia (University of Alicante)

Abstract format: Oral

In Menorca (Balearic Islands, Spain) there is a type of tomb called a complex plant hypogea, which is actually a rock tomb carved in stone. This type of space has been chronologically dated between the 6th and 2nd centuries BCE on the basis of archaeological artefacts recovered from secondary contexts, but given the diversity of caves with similar characteristics and the fact that many were reused and looted, we propose a new study perspective that will allow us to classify them. We consider rock tombs to be the result of human labour, which means that the activities involved in their creation must have been part of the production process that characterises every society, past and present. Menorca has several quarries that have been put into operation in modern times, but where did the stone come from that was used to build the villages and sanctuaries that dot the Menorcan landscape and date back to between the 6th and 2nd centuries BCE? Our proposal is based on the idea that the carving of rock-cut tombs is part of a chaîne opératoire that links the world of the dead and the living, not only through a vital process such as death, but also through the reuse of stone in the construction of living spaces. In this sense, we understand rock-cut tombs not only as funerary sites, but also as quarries that provided stone for settlements. Our proposal attempts to deal with the structural variability of rock-cut tombs by means of a typological classification. In this classification or grouping, the analysis of the carving marks is essential to understand the qualitative changes in the lifestyles of the human groups on Menorca.

3 WEAVING STONE ITINERARIES BETWEEN CAVES, QUARRIES AND BUILDINGS, IN THE AREA OF MUROL AND SAINT NECTAIRE (MASSIF CENTRAL/AUVERGNE, FRANCE)

Abstract author(s): Sciuto, Claudia (University of Pisa) - Allios, Dominique (University of Rennes 2)

Abstract format: Oral

The Puy-de-Dôme (Massif Central/Auvergne, France) is a territory marked by an intense past volcanic activity, a landscape characterised by the colours and textures of different rock types. The aim of this study is to characterise the human-environment interaction in relation to geological outcrops, as expressed in the traces of rock-carved dwellings and stone quarries. The study area is located around the massif of Mont-Dores (including the castle of Murol, the roman church of St. Nectaire and several rock-cut settlements), analysed for a time span going from the early Middle Ages to the modern period.

The coexistence of rock-cut features and quarry traces suggests an overlapping of activities of a different nature at specific outcrops. The porous and friable volcanic rocks favour the carving of articulated rock-cut structures and can well be used in construction to unload masonry weight (i.e. St. Nectaire church's vaults).

Data collected on the traces of carving, still visible in this sector, provide information on the different methods of extraction, to show the integration of rock-cut sites in the local system of stone quarrying. Moreover, the combined study of rock-cut sites, quarries and monuments give us an important chronological reference. While it is sometimes difficult to establish the different phases of occupation of rock-cut sites, we are able to identify chronological markers by looking at the evidence of stone extraction and the usage of materials in specific construction –combined with the analysis of the few pottery sherds.

Through this paper, we aim to demonstrate how the study of the complex relationship between human communities and geologies can be better understood through a holistic approach that takes into account different types of production and interaction.

4 CARVING OUT VALUE: METHODOLOGIES FOR EXTRACTING DATA FROM EPHEMERAL SURFACE QUARRIES

Abstract author(s): Whitaker, Katy (Historic England)

Abstract format: Oral

In the UK, surface quarries are a poorly researched aspect of stone and bulk mineral extraction, highlighted as requiring attention in the current Research Framework for the Archaeology of Mining and Quarrying (Newman 2016). Small pits for a variety of materials and use of 'moorstone' – surface boulders that do not need to be split away from a rock face – were once much more important parts of local community economies. Despite the importance of these resources to landowners and villagers, archaeological records for ephemeral surface quarrying are usually scanty. On the one hand, the sites have often been lost to redevelopment, re-filling with waste disposal or reversion to agriculture; on the other hand, this type of extraction was rarely regulated so there are few if any relevant documentary sources. This paper presents methodologies developed in the study of post-medieval surface extraction sites for sarsen stone, a material available as cobbles and boulders in southern and eastern England that is better known for its use in prehistoric megalithic monuments. Specifically, it will focus on the careful use of traditional measured survey at a quarry site in its landscape setting in the county of Wiltshire, combined with the detailed recording and analysis of tool marks to show that there is value in paying attention to ephemeral stone extraction sites.

5 FINDING THE PERFECT LOCATION. CLOSE-UP SHOT ON ROCK-CUT CHURCH WORKSITES

Abstract author(s): Lamesa, Anaïs (IFEA)

Abstract format: Oral

When it comes to rock-hewn churches, studies have rarely mentioned or even almost systematically overlooked the fundamental question of the choice of location. This first step of implementation, however, is a fundamental gesture of creation. The choice of the location is explained by several phenomena where human or/and natural agencies are entangled.

Building on the idea that a church remains a church, whether it is built or rock-cut, we believe that it is possible to compare built and rock-cut spaces because the nature of the monuments does not affect their function. Using the location choice of rock-cut churches as an example, we propose to carry out the survey and test this hypothesis, and to thus delineate the taskscape of rock-cut worksites.

We will start from the analysis of case studies: churches dating from medieval times, located in Cappadocia and Ethiopia. We will integrate technical archaeology, ethno-archaeology and history to highlight convergences and divergences in this comparative approach. Along this presentation, we will define criteria, useful to understand the choices that led communities, patrons or stonecutters to initiate the process of creating a rock-hewn church and at the end, shed the light of the intertwined of human and natural agencies.

6 TECHNOLOGY AND TRANSFORMATION OF THE ROCKY LANDSCAPE OF ST PEDRO DE ROCAS (GALICIA, SPAIN). QUARRIES, ROADS AND RUPESTRIAN MONASTIC COMPLEX

Abstract author(s): López Quiroga, Jorge (Universidad Autónoma de Madrid) - Figueiras Pimentel, Natalia (Universidad Complutense de Madrid)

Abstract format: Oral

Mount Barbeirón is a large geological formation of granitic rock formations with monumental characteristics in an area of 700 ha. The rupestrian monastery of St Pedro de Rocas is located on the slope of Mount Barbeirón, surrounded by huge and diverse rock formations that housed the first hermitage community. The name of the monastery, as

stated in a document from the year 1007, implies this reference to its geology and morphology: *ecclesia edificata inter alpes rocas nominata*. The research carried out has allowed us to identify a material reality that constantly evolves from Prehistory to the 19th century. The rocky landscape is transformed by human action through a precise technology that adapts to the material reality of the territory. There is a continuous use of natural formations for the creation of domestic and worship areas, already from the Neolithic. Later, with the arrival and settlement of the first communities of hermits the rock is systematically excavated for domestic use (cells, accesses, canals, silos), worship (rupestrian bell tower, chapels) and funerary (cemetery of rock-cut tombs). The technology used for the carving of the rock is adapted depending on the needs and uses that the various communities of inhabitants give to the rocky support as construction raw material. In Mount Barbeirón we have identified numerous communication routes that are distributed optimizing the existing topography. We have been able to locate and identify a complex and structured network of quarries for the extraction of construction material for various purposes: construction of walls for communication routes and living spaces, hermitage and coenobitic cells, as well as for the monastery itself, in its different phases throughout the Middle Ages and Modern Times. In short, a natural landscape in which the rock has been carved, worked and sacred throughout millennia of history.

7 'AN EXTREMELY CURIOUS ROCK, INHABITED BY A CLEAN AND DECENT FAMILY': UNDERSTANDING ROCK-CUT STRUCTURES IN QUARRIED LANDSCAPES

Abstract author(s): Simons, Edmund (Royal Agricultural University)

Abstract format: Oral

The English Midlands has a surprisingly large number of substantial rural rock-cut buildings, ranging from Early Medieval hermitages to 19th century working class housing. Even in many demonstrably early sites there is often a very close relationship between quarrying and rock-cut buildings. Most commonly this is when structures are set within artificial cliff faces created by earlier extraction, but sometimes the relationship is more complicated, and things are not what they seem.

This paper will look at several English Midlands case studies from the Rock-Cut Buildings Project; this project is the first attempt to look at British domestic rock-cut structures as a group, to develop methodologies to record and understand them and their landscapes. The paper will explore how, by analysing negative stratigraphy and by comparing multiple sites, we can understand a little of a neglected, but important monument type. It will look at evidence of eremitic landscapes evolving into and forming the setting of extractive, industrial and touristic places.

The short paper will include tales of rock-cut dwellings saints, dragons, witches, charladies and Hobbits.

The author is director of the Rock-Cut Buildings Project at the Cultural Heritage Institute.

389 ROUNDTABLE SESSION OF THE EAA COMMUNITY ON THE ILLICIT TRADE IN CULTURAL MATERIAL

Session theme: 6. Contested Pasts & Presents

Session organisers: Godfrey, Evelyne (Uffington Heritage Watch) - Beaulieu, Kiara (University of Antwerp) - O'Brien, Leonora (AECOM)

Session format: Round table

Archaeological sites and artefacts are of course central to cultural identity formation. What has been shifting in recent years, for example in the decolonisation movement, is the emphasis on the ethical and universal Human Rights aspects of the creation of national archaeological narratives.

This roundtable session will concentrate discussion on the Principles of Archaeological Research section of the EAA's revised Code and Principles. The topics covered in that section are: ethical practice in expert evaluation of archaeological material; publication of decontextualised archaeological artefacts; Indigenous heritage; restitution and repatriation of contested heritage objects; and the ethical treatment of archaeological human remains.

The area of interest of the EAA Community on the Illicit Trade in Cultural Material also includes Cultural Heritage Management, especially in relation to excavation and collecting of artefacts that are likely to be sold on the Art Market, intentional destruction of archaeological sites, looting in peacetime as well as during armed conflict, the social impact of Heritage Crime, and contrasting interests of economic development and archaeological site conservation.

The Roundtable discussion will focus on the following questions:

'How does archaeological expertise support the antiquities market?'

'To what extent can harm-evaluation principles developed in Human Rights cases be borrowed for the purposes of heritage crime?'

'Ethical treatment of archaeological human remains: How do we respect the dead?'

‘Preservation-by-record, collecting, and trade in cultural material: legal for now, but sustainable in the future?’

‘Which socio-economic interests are associated with archaeological sites, and how do stakeholders suffer due to heritage crime?’

‘Ethics in practice: how do we successfully integrate professional collaboration, construction management planning, and international development-led archaeology?’

‘What does decolonisation look like from an Indigenous perspective?’

390 METHODS AND MODELS FOR THE STUDY OF HUMAN-BIRDS RELATIONSHIPS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Demarchi, Beatrice (University of Turin) - Yeomans, Lisa (University of Copenhagen) - Codlin, Maria (University of Turin) - Best, Julia (Cardiff University)

Session format: Regular session

Birds are intertwined with human lives in three critical ways: avifauna is incorporated into subsistence strategies as an important food resource (meat and eggs); birds have a variety of symbolic meanings due to their connection with the sky and seasonal cycles; their migratory patterns are extremely sensitive to environmental change, thus influencing human-bird coexistence. In human-bird interaction studies, the accurate identification of archaeological remains is fundamental: behaviours, morphologies and ecologies displayed by avifauna are hugely diverse, which makes the category of “birds” almost meaningless for archaeological interpretations.

Recent developments in archaeological science have opened up new avenues for analysis of avian remains, which complement zooarchaeological methods. These include: biomolecular techniques and geometric morphometrics for the taxonomic identification of eggshell and bone; novel methods for obtaining age and environmental information (e.g. through the analysis of stable and/or radioactive isotopes); experimental and taphonomic approaches. However, the data generated by these methods have seldom been fully integrated into comprehensive archaeological and ecological models. We welcome contributions which showcase and critically discuss the contribution of new methods towards revealing nuances in human-avifauna interaction.

ABSTRACTS

1 PROTEOMIC ANALYSIS OF AQUATIC BIRD EGGSHELLS FOR ENVIRONMENTAL RECONSTRUCTION

Abstract author(s): Codlin, Maria (University of Turin) - Yeomans, Lisa (University of Copenhagen) - Demarchi, Beatrice (University of Turin)

Abstract format: Oral

Eggshells from archaeological contexts indicate the presence of breeding bird populations, which can shed light on local environmental conditions or management by humans. Many aquatic birds, for example, migrate and readily alter their behaviours to meet their specific habitat requirements for feeding and nesting. Identifying eggshells from these species can thus inform us on the state of local wetland ecosystems. Yet eggshells are currently underutilized, owing to their lack of recovery from archaeological sites and the difficulty of identifying eggshell to taxonomic groups. Here we present methodological developments for the analysis of eggshell proteins to improve the taxonomic identification of eggshells from archaeological sites. We outline how eggshells can be recovered archaeologically and the important principles for extracting protein from ancient eggshell. We also present new biomarkers for distinguishing among birds in the Anatidae family and demonstrate how this method can be applied to improve environmental reconstructions of local wetland ecosystems in the past.

2 ARTIFICIAL INTELLIGENCE AND ARCHAEOZOOLOGY: THE USE OF NEURAL NETWORKS FOR CLASSIFICATION OF AVIFAUNA ARTIFACTS

Abstract author(s): Paperini, Elisa (Università di Pisa) - Dubbini, Nevio (Miningful Studio srls) - Gattiglia, Gabriele (Università di Pisa)

Abstract format: Oral

Artificial Intelligence (AI) has been increasingly explored in Archaeology in the last ten years. The application of AI techniques, for example, neural networks, represents a valid aid in repetitive or time-consuming activities, such as cataloguing finds; identification of traces of use on osteological, lithic, or ceramic material; evaluation of markers on the ground for the recognition of archaeological sites.

This presentation discusses the development of a convolutional neural network implemented to be applied in the archaeozoological field to catalogue the osteological specimens of avifauna. Zoomorphological studies are of increasing importance, especially regarding understanding environmental changes and how humans and animals relate to each other. For these reasons, the structuring of reference collections as well as the comparison between finds and catalogues, are essential for correctly recognising archaeological faunal remains. The neural network was developed starting from a dataset of 1833 photographs of five different types of bones (carpometacarpus, humerus, coracoid, tibiotarsus, tarsometatarsus) belonging to 25 species of ducks, coming from the reference collections of the Zoological Museum of Copenhagen (Denmark) and the Tring Natural History Museum (England), and reached 86% of accuracy.

The analysed osteological remains represent the parts of the body among those most subject to ecomorphological and morphological changes between classes, i.e. the wings (carpometacarpus, humerus, coracoid) and the lower limbs (tibiotarsus, tarsometatarsus). From an archaeological point of view, the study of Anatidae remains can provide important information regarding the reconstruction of the environment and the seasonality of the deposition: most Anatidae prefer wetlands and migrate twice a year. From their presence, it is also possible to infer specialised hunting patterns.

3 HUMAN-BIRD INTERACTIONS IN THE LEVANT DURING THE LATE PLEISTOCENE TO EARLY HOLOCENE: MULTI-SCALAR ANALYSIS OF AVIFAUNAL REMAINS

Abstract author(s): Yeomans, Lisa - Mazzucato, Camilla (University of Copenhagen)

Abstract format: Oral

This presentation describes analyses of avifauna from Late Pleistocene and Early Holocene sites in the Levant at different scales. Firstly, the avian osteological data from a long sequence of occupation at Shubayqa in Eastern Jordan is presented illustrating changing human-bird-environment interactions over the course of 4000 years. Secondly, this data is compared to published avifaunal assemblages spanning the Upper Palaeolithic to Early Neolithic investigating the range of relationships between birds and humans. Humans hunted birds for subsistence but extensive evidence for the symbolic importance of birds suggests a complex interaction between species. Ubiquity analysis, similarity indices and multivariate analytical methods are employed to explore these interactions. During the Late Pleistocene and Early Holocene of the Levant, increasing exploitation of birds is often framed in the context of resource diminishment with humans resorting to hunting lower return species as populations of larger mammals declined. However, results from Shubayqa as well as the wider region demonstrate that human-bird interactions was complex with habitat alteration, hunting strategies as well as the symbolic importance all influenced how birds and humans interacted.

4 COMMON BIRDS: APPLYING MULTI-METHOD ANALYSES OF CHICKENS TO ENHANCE UNDERSTANDING OF AVIAN-HUMAN RELATIONSHIPS

Abstract author(s): Best, Julia (Cardiff University)

Abstract format: Oral

Chickens are the world's most widespread and abundant domestic animal. They number more than 23 billion and provide much of the world's primary meat and egg resources. They are frequently found on a range of archaeological sites and often feature in zooarchaeological studies. However, until recently there was a tendency for our most common bird to rarely be studied through multi-method analyses or integrated into wider archaeological research questions and interpretations. For example, despite chickens dominating the world today, the timing and circumstances of their spread across the globe, and their transition into a food resource have been poorly understood.

By combining c14 dating, proteomics, isotope analysis and zooarchaeology we have the potential to add nuance to our understanding of these important animals in multiple different contexts. This paper stems from (and acknowledges) a wide range of collaborations and reflects on the challenges, limitations, opportunities, and potential of dating chickens, whilst exploring their shift from a rare, exotic, special bird to a common food source. It presents new evidence for the timing of the spread of chickens across Europe, their use on arrival and well beyond. Using proteomics and medullary bone studies we also explore the creation of repeated egg laying and its impact on the chicken's role in food production. These methods and programmes of analysis allow a multi-scalar insight into avian-human interactions, from the detailed study of individual animals to broad regional models. Combined these approaches investigate the changing dynamics of human-chicken relationships and highlight the value that integrating these more comprehensively can bring to wider archaeological narratives.

5 AN OSTEOBIOGRAPHICAL APPROACH TO ANALYSING FALCONRY BIRDS IN BRITAIN

Abstract author(s): Britton, Hannah - Sykes, Naomi (University of Exeter) - Black, Stuart (University of Reading)

Abstract format: Oral

For over a millennium in Britain hawks and falcons have held a unique relationship with humans through the medium of falconry. Despite a plethora of research surrounding these birds, with references to key historical texts such as the 'Boke of St Albans', most archaeological literature addressing falconry synthesises data from published site reports. While this methodology has illuminated the scope of falconry within Britain, it only provides a cursory insight into the nature of human-raptor relationships, not allowing for in-depth assessment such as sex distribution, pathological assessment or exploration of morphological adaptations. Particularly, this approach does not account for possible species misidentification raising concerns with the validity of any conclusions drawn from the current literature in the field.

This paper presents example case studies which employ an osteobiographical approach to reassess human-raptor relationships utilising novel methodologies, integrating both dietary isotopes and morphometrical analysis such as geometric morphometrics. This research will elucidate the complex human-raptor relationships in Britain and will demonstrate the value of re-visiting individual specimens to uncover individual life-histories.

6 THE LANDSCAPE OF PIGEON TOWERS IN IRAN: HUMAN-BIRD RELATIONSHIPS FOR RESOURCE MANAGEMENT BETWEEN MIDDLE AGES AND MODERN AGE

Abstract author(s): D'Erasmus, Domizia - Giovino, Noemi (Sapienza University of Rome)

Abstract format: Oral

This study focuses on the analysis of clay towers located in the province of Isfahan (Iran) built to contain pigeon guano for the cultivation of melon and watermelon fields (Borj-e Kabotar. Architecture and anthropology of the pigeon towers in the Isfahan province project). According to written sources, the estimated total of these towers amounted to about 700 structures, while the total mapped through field surveys, conducted by the Iranian-Italian project team, is about 100. Currently, the research has focused on the survey of the towers but it is moving towards a broader study on the themes of Landscape Archaeology in order to understand the dynamics of the historical landscape in which the buildings were placed into a long-term perspective of settlement and land management of a rural economy system in which the pigeons themselves play a fundamental role. The first records of these monuments date back to the Middle Ages, but most of those surveyed, and still standing, date back to the Safavid period (16th century). This paper aims to offer a concrete contribution to the study of human-bird relationships on the basis of archaeological evidence as a concrete case study of buildings constructed for the specific purpose of breeding pigeons not only as a food resource in the Iranian landscape in historical times.

7 USING LINEAR AND GEOMETRIC MORPHOMETRICS TO TRACK CHANGES IN HISTORICAL GOOSE HUSBANDRY IN BELGIUM AND NORTHERN FRANCE

Abstract author(s): Gruwier, Ben (Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel; Research Unit: Analytical, Environmental and Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel) - Oueslati, Tarek (HALMA- UMR 8164 - CNRS, Université de Lille) - Snoeck, Christophe (Multidisciplinary Archaeological Research Institute, Department of Art Sciences and Archaeology, Vrije Universiteit Brussel; Research Unit: Analytical, Environmental and Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel)

Abstract format: Oral

At the end of the Middle Ages, a growing urban population in Northwestern Europe fueled the demand for food products, which set in motion a series of innovations in agricultural practice. Zooarchaeology has contributed to our understanding of the timing and nature of this process, by using changes in size and morphology in domestic mammals, as a proxy for the introduction of larger and more productive livestock breeds. However, the role of birds, and in particular geese, in this process, has been largely neglected.

This study demonstrates the use of linear and geometric morphometrics (GMM) to track changes in goose husbandry and breed improvement in (post-)medieval Belgium and Northern France. By combining traditional (i.e. LSI) and novel approaches (GMM) in morphometrics, it is possible to make use of the large zooarchaeological dataset available for the region, while at the same time account for confounding effects, such as the presence of wild geese in archaeological samples. Firstly, our results indicate that wild goose exploitation seems to have had a limited role at most sites and its presence doesn't preclude an analysis of size changes in domestic geese. Secondly, the morphometric dataset suggests that goose stature remained relatively stable during the Medieval and early Modern period. Therefore, the intense selection for larger individuals, with significant skeletal changes, may have been a relatively late phenomenon, starting in the 18th century or later. It can be concluded that geese probably played a minor role in the agricultural

modernisation processes of the late Middle Ages and early Modern period, and that the selection of more productive animals, was largely focused on other species, such as cattle, pig, sheep and perhaps chicken.

8 BIRDS, ZOOARCHAEOLOGY AND ARCHIVE RECORDS

Abstract author(s): Kivikero, Hanna (University of Helsinki/Stockholm University)

Abstract format: Oral

Zooarchaeological analyses have been used to interpret sites for decades. Species, cutmarks, sex, age, and anatomical distribution are some of the aspects of analysis that are often used to understand animals in sites. Whereas zooarchaeological assemblages can give an idea of the animals from their physical residue, other aspects of faunal remains can be found from archive sources. Records, such as accounts, customs records, laws etc. are just some of the sources where animals can occur and represent information of animals from another angle compared to the zooarchaeological assemblages. These records are also informative in parts of animals that are rarely found archaeologically, such as different types of animal fats, intestines or other non-osseous parts. Occasionally, texts can also help to understand the lack of bone material in contexts.

Combining primary data from both zooarchaeological assemblages and archive records have in recent years proven to be a fruitful way of understanding the role animals had to people and societies. The two materials are fragmentary in their own aspects. When combined, it is possible to get a more comprehensive picture of the attitude towards animals and the processes behind the zooarchaeological assemblages. This paper will concentrate on different aspects of combining zooarchaeological assemblages with archival records to gain more knowledge of birds in the Baltic Sea. The focus will be in what kind of information archive records can give of birds and bird related products and how they play into the general knowledge of human-bird interaction together with zooarchaeological remains, as well as problems related to the source material.

A. FEATHERED FOOTPRINTS: UNRAVELLING THE SPATIAL DISTRIBUTION OF EVOLVED AURIGNACIAN BIRD REMAINS FROM ARBREDÀ CAVE

Abstract author(s): Marqueta, Mario (Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA; Departament d'Història i Història de l'Art, Universitat Rovira i Virgili) - Rufí, Isaac (Institut de Recerca Històrica, Universitat de Girona) - Lloveras, Lluís (SERP, Departament d'Història i Arqueologia, Universitat de Barcelona) - Garcia, Lluís (Chercheur associé à l'UMR 5140 CNRS) - Maroto, Julià - Soler, Joaquim - Soler, Narcís (Institut de Recerca Històrica, Universitat de Girona) - Huguet, Rosa (Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA; Departament d'Història i Història de l'Art, Universitat Rovira i Virgili; Unit associated to CSIC, Departamento de Paleobiología, Museo Nacional de Ciencias Naturales)

Abstract format: Poster

During the Upper Palaeolithic period, the western Mediterranean regions recorded an intensification of the small prey hunting by human groups. Arbredà Cave is an exceptional site where this dietary shift can be observed, being influenced by environmental changes. The Evolved Aurignacian level (G), dated 38200 - 35630 cal BP, preserves faunal and lithic remains that provide clear evidence of human activity, highlighting the consumption and contribution of bird and rabbit remains.

Taphonomic analyses on the bird remains revealed that humans were the main accumulating agents at this level. However, a small proportion of the remains have a non-human origin, with raptors and carnivorous mammals taking part in the avifaunal accumulation at this level.

Previous spatial analyses on the Middle (E) and Final (D) Iberian Gravettian levels of the cave suggested, based on the concentration of macrofaunal remains, a spatial organisation by hunter-gatherers in which hearths played a role in the nucleation of space. Furthermore, this distribution revealed how humans organised the space after the ceiling collapse that took place in the cavity after the Evolved Aurignacian.

The aim of this study is to identify, based on the spatial distribution of the zooarchaeological and taphonomic data on bird remains, areas of anthropic bird accumulations by hunter-gatherers during the Evolved Aurignacian. The obtained results reveal a concentration of anthropized bird remains near the west wall of the cave. Furthermore, those contributed by non-human predators follow a more extensive dispersion. These data will contribute to understand how human groups organised the space, as well as to better understand the relationship between the morphology of the cave and the processes of bird accumulation during the Evolved Aurignacian.

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Brughmans, Tom (Centre for Urban Network Evolutions - UrbNet) and Classical Archaeology, Aarhus University) - Coto-Sarmiento, María (Eberhard Karls Universität Tübingen)

Session format: Regular session

Theory and method are thriving like never before in current Roman archaeology. Computational and natural science methods abound in the field, and the theoretical landscape in Roman Studies is rich and diverse (as illustrated by the scope of the new Theoretical Roman Archaeology Journal: <https://traj.openlibhums.org/>). Moreover, the availability of massive amounts of richly documented material culture and the availability of textual sources have enabled Roman Studies to lead in certain areas, including the application of network science, linked open data, simulation, and space syntax. Huge new linked open databases and complex systems theory modelling in particular reveal the prospect of significantly enhancing our understanding of this highly structuring era in European history.

It is crucial that this momentum goes hand-in-hand with a critical attitude towards the necessary overlap between theory and method. On the one hand, theory development needs to consider representability, comparability, testability and assessment of plausibility. On the other hand, computational modelling of phenomena like movement between Roman settlements, the spread of strongly held beliefs like the cult of Mithras, or long-distance trade in Roman economic systems, necessarily rely on diverse and critical theory modelling and debate.

This session will debate the representation, comparison and development through computational approaches of current theory in Roman Studies.

Relevant topics include but are not limited to research in Roman Studies on applications of GIS, simulation including agent-based modelling and mathematical modelling, text mining, machine learning, acoustics modelling, network science, 3D modelling, space syntax and papers discussing the methodological or theoretical potentials and challenges of these approaches. All presenters are required to explicitly specify theories, and demonstrate how theories are formally represented in methodological approaches.

ABSTRACTS

1 SPATIAL INTERACTION MODELS AND CENTRAL PLACE THEORY IN ROMAN RAETIA (AD 1ST - 3RD C.)

Abstract author(s): Vadineanu, Paul - Paliou, Eleftheria (Universität zu Köln)

Abstract format: Oral

The emergence and evolution of central places within ancient settlement networks have long been topics of academic interest. In recent years, the study of such phenomena has greatly benefitted from the development of ever more refined computational tools and methods. In particular, Roman archaeology has seen a plethora of spatial models and quantitative-focused works that attempt to examine settlement interactions at the regional and microregional scales to make better sense of the complexities of Roman urbanism. Despite this, efforts to understand the roles of secondary agglomerations, such as civitates and vici, within provincial and local settlement interaction networks – have so far been tentative.

Using Raetia as a case study during its distinct phases of occupation in the Early and Middle Empire periods, we will explore regional and smaller-scale patterns that bring into focus the hazy intricacies of the Roman provincial system. We will employ spatial interaction models of broad Wilson type, which have been used in the past to simulate the emergence of central places in various cultural and temporal contexts. In particular, we will look into the potential of these models to highlight and explain possible central place functions of secondary agglomerations within a Roman urban context. The theoretical assumptions of the models employed will be discussed as they relate to central place theory, and the results will be interpreted while keeping past assumptions of urban/rural interactions in mind. We anticipate that this endeavour which focuses upon often overlooked secondary agglomerations will be useful in shedding light on the reasons why certain small-scale settlements achieved some measure of centrality while others did not. Lastly, we wish to look at urban affordances as measures of centrality, and especially to explore the role of fora – with their administrative, commercial and religious functions – within evolving settlement systems and centrality patterns.

2 THEORY, TREE-RINGS AND TRYING TO MODEL THE ROMAN WOOD PROVISION

Abstract author(s): Visser, Ronald (Saxion University of Applied Sciences)

Abstract format: Oral

Theory and computational methods are natural friends that allow us to understand wood use and provision in the past in an efficient way. Wood is one of the most important resources, both in the present world as in the past. It is one of the most sustainable and strongest building materials. The use of wood is versatile and it is therefore not surprising that many structures were made of wood or timber in the Roman period. Wood was needed for nearly everything in the Roman world, not only the ships that travelled along the rivers, the carts that moved along the roads, the pegs to secure tents, but also tools and weapons were made (partly) of this material. Various attempts were made to calculate an estimate of the amount of wood needed in the Roman period. For the Lower Rhine region, some studies state that the local landscape could have provided sufficient (fuel) wood and timber to sustain the local population, others debate this conclusion. In addition, there is strong evidence that timber has been transported over hundred(s) of kilometers. This paper will discuss how dendrochronology and computational methods, such as network analyses, GIS and statistics, can help to create a theoretical and archaeological model or framework to understand the Roman wood provision.

3 BETWEEN MOUNTAIN AND SEA: UNDERSTANDING SETTLEMENT PATTERNS AND ECONOMIC DEVELOPMENT IN ROMAN LYCIA THROUGH MOBILITY AND CONNECTIVITY MODELLING

Abstract author(s): McLean, Andrew (University of Edinburgh) - Rice, Candace (Brown University)

Abstract format: Oral

Understanding the ways in which dynamic socio-ecological relationships influenced Roman economic development is a difficult theoretical and methodological undertaking. Relationships between settlement patterns and economy are not straightforward, particularly in the Roman East, where many large urban centres existed prior to, and continued to flourish under, Roman rule. Better approaches to contextualising the complex relationships between landscape and settlement, both old and new and urban and rural, are needed. Recent methodological developments in computational archaeology and spatial analyses in GIS offer promising potential to overcome these theoretical issues.

This paper aims to tackle some of these issues, and to deepen our understanding of wider economic trends under Roman rule by analysing mobility using innovative computational methodologies. It is proposed here that a combined Least Cost Path (LCP) and Circuit Theory (CT) analysis of mobility amongst urban and rural settlements in the mountainous interior and harbours and ports along the coast of Roman Lycia offers valuable insight into patterns of connectivity and economic development the region. LCP provides information on the cost between sites but is restricted to a single optimal route between fixed points. On the other hand, while exact costs between sites are difficult to model in CT, this method allows for a whole region of mobility to be modelled, and it is proposed here, offers a proxy for connectivity between sites, through a more holistic approach acknowledging the complex nature of relationships between a variety of sites. Using a combined approach, we can understand how potential mobility and cost-distance from the coast may have affected settlement patterns and structured wider economic development and relationships.

This paper demonstrates the applicability of a new theoretical approach to modelling mobility for deepening our understanding of the complex processes that shaped the development of settlement and economic life in the Roman Empire.

4 MARKET COMPETITION IN A FRONTIER REGION: EXPLORING ECONOMIC TRENDS IN GERMANIA DURING THE ROMAN EMPIRE THROUGH SIMULATION EXPERIMENTS

Abstract author(s): Coto-Sarmiento, Maria (University of Tübingen; Aarhus University) - Brughmans, Tom (Aarhus University) - Franconi, Tyler (Brown University)

Abstract format: Oral

This study explores economic trends in the Roman market for olive oil and wine in ancient Roman Germany. This region became essential during Roman military campaigns expanding the Empire and protecting its north-western borders. However, the organisation of the supply of foodstuffs to the military stationed along this border via a large-scale infrastructure network is a matter of debate.

We contribute to this debate by exploring competing hypotheses using an Agent-Based Model. Computational models in combination with archaeological data provide a powerful approach to exploring theories about economic mechanisms during the Roman Empire. We will discuss our process of abstracting and representing Roman economic theories in a computational simulation context. In particular, we compare different price-setting mechanisms based on free market principles and state interventionism for the market of two specific products (olive oil and wine) and explore differences between results for military and civilian settlements. Our model's simulated outputs will be compared against the patterning identified in the RAAD database of transport amphorae published for 79 sites in

Germany. We will present an analysis of the patterns of wine and olive oil production from different regional origins, and the results of simulation experiments aimed at enhancing our understanding of how the distribution of products in the region evolved and changed drastically over time.

5 **MODELLING URBAN COMPLEXITY IN HELLENISTIC AND ROMAN ANATOLIA (200 BCE-200 CE)**

Abstract author(s): Beaujean, Bas (Sagalassos Archaeological Research Project) - Daems, Dries (KU Leuven)

Abstract format: Oral

Recently, the combined potential of urban science methods and archaeology to contribute to the study of the long-term drivers of urbanism has been emphasized (Ortman et al. 2020). Beyond individuals and houses, cities are the result of multitudes of social, economic, cultural, political and religious dynamics. To untangle this complex set of driving factors in long-term urban development, we need rigorous approaches that allow us to formalize theories and test hypotheses regarding the origins of the urban centre, its functioning, and its integration in wider urban networks. Simulation techniques like agent-based modelling allow such rigorous testing.

In this paper, we model cities as hubs of energy, resources and information flows, based on a recent model of social complexity formation (Daems 2021). As our starting point, we use a well-defined set of selection pressures: subsistence, cooperation, competition, interaction, distribution, production, governance, and demography. These act as probabilistic, multi-level causal factors for the decision-making processes of social groups that shape the energy, resources and information flows driving urban formation. For example, increased competition between cities might initiate increased settlement nucleation, resulting in denser urban centres and decreasing numbers of rural settlements. This could create a trade-off with sufficient land to sustain the community or the desire to participate in trade networks. By simulating such synergies and feedback loops between multiple selection pressures in a probabilistic framework, we generate scenarios that we can compare to empirical data from the archaeological record, to better understand long-term trajectories of urban development. As urban(-like) communities developed for almost 10,000 years throughout Anatolia, and the Hellenistic and Roman periods in particular represent phases of peak urban development, we focus on Hellenistic and early Roman Imperial times in Anatolia (200 BCE-200 CE).

392 **PEAKS OF DATA - COLLECTING, MANAGING AND ANALYSING ARCHAEOLOGICAL DATA FROM MOUNTAIN LANDSCAPES**

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Basile, Salvatore - Anichini, Francesca (Pisa University) - Carrer, Francesco - Domingo Ribas, Guillem (Newcastle University) - Sciuto, Claudia (Pisa University)

Session format: Discussion session

Mountain archaeology has a long tradition of study; however, in recent years new methodologies and theories for studying these landscapes have emerged, also thanks to the widespread development and use of digital technologies for the management of big datasets.

Numerous scholars have investigated the different facets of these landscapes with multiscale and interdisciplinary approaches, shedding new light on the dynamics of mountain's communities.

The characteristics of mountain landscapes, such as poor visibility in forested areas or deep slopes, have led to the development of different approaches, to collect information even in extreme environments. This results in a variety of data collection methods, depending on landscape features, scale of investigation, chronologies and research objectives. Field surveys may in fact be accompanied by targeted excavations, ethnoarchaeological and ethnographical approaches, and the analysis of paleo-environmental and paleo-climatic data, highlighting the importance of multi-proxy-multidisciplinary databases.

Spatial and computational analysis help to identify patterns in big and diverse datasets and are used to assess representativity and biases in data. Statistical methods and predictive modeling can be used to mitigate these biases and restore realistic images of the human-environment dialectic in the formation of the mountain landscapes.

Finally, data management can contribute to FAIR data sharing, ensuring transparency in scientific practice inside and outside the scientific community, which can aid research work on landscapes where data acquisition is so complex.

This session aims at comparing the different methods of collecting, managing, and analysing archaeological data acquired in mountain landscapes. We seek contributions related to any chronological period on topics including (but not limited to):

- innovative and interdisciplinary case studies of data acquisition, data analysis, and management.
- theoretical and methodological approaches for the mitigation of biases in archaeological data from mountain landscapes.
- novel approaches for the integration of multiproxy-multidisciplinary datasets.

1 FROM THE MOUNTAIN TO THE DATA: DIGITAL DOCUMENTATION IN THE ARCHAEOLOGICAL SURVEYS

Abstract author(s): Voccia, Raffaele - Anichini, Francesca - Basile, Salvatore - Gattiglia, Gabriele - Paperini, Elisa - Sciuto, Claudia (University of Pisa)

Abstract format: Oral

The Versilian side of the Apuan Alps, in the municipalities of Stazzema, Camaiore, and Serravezza (Northern Tuscany, Italy), is rich in undocumented archaeological evidence belonging to historical periods ranging from the Neolithic to the contemporary and present era. Since 2020, the MAPPA Lab of the University of Pisa has conducted archaeological surveys to identify, document and analyse archaeological evidence and investigate the complex mountains' environmental and settlement dynamics. The fieldwalking was conceived as a 'siteless survey' based on Topographical Unit (TU), understood as the minimum recognisable spatial unit into which the territory can be divided and where human and non-human actions were carried out. Artefacts were collected by surface units (i.e. TU), and each unit was analysed separately and independently and interpreted in relation to the other. For this purpose, a digital recording of each TU was achieved during the fieldwork through Geopaparazzi, an open access App, which allows to georeference and archive data using mobile devices. Data is stored as point and line features (tracking) in a .kml file which is then cleaned and converted in a .csv file that can be imported in a GIS environment. We used QGIS to render the TUs spatial consistency vectorising them as a polygonal .shp file based on the tracking that describes the TU limit. Hitherto, 466 TUs were identified and documented. This procedure avoids the time-consuming post-survey digitalisation process and allows us to concentrate on the data interpretation.

2 USING LEGACY DATA TO ASSESS HUMAN-ENVIRONMENT DYNAMICS: A PREDICTIVE MODELLING APPROACH FOR THE MOUNTAIN LANDSCAPE OF ROMAN VERSILIA AND GARFAGNANA

Abstract author(s): Basile, Salvatore (- Campus, Antonio (Pisa University - MAPPA Lab)

Abstract format: Oral

Mountain archaeology has a long research tradition and in recent years the number of studies on this topic has increased considerably, shedding new light on the dynamics of mountain's communities. Renewed efforts aimed at systematically acquiring new data using traditional methodologies or developing new collection methodologies have been more rarely accompanied by a review and digitization of legacy data.

Versilia and Garfagnana districts (Lucca, north-western Tuscany) largely fall between the Apuan Alps and the Apennine ridge. Although these territories have never been systematically investigated, the collection of all available archaeological legacy data indicates a settlement pattern of undoubted interest for the Roman times.

So far, a geo-referenced picture of the archaeological record was missing, and the lack of specific analyses of the settlement-environment interrelationship prevented from identifying and explaining large-scale settlement patterns; this paper will attempt to fill this gap, integrating Point Pattern Analysis and Logistic Regression approaches, and finally create a predictive map, to mitigate biases in data and evaluate settlement dynamics in relation to this specific environment.

Analyses prove the spatial dependence of finds with geomorphological and pedological variables, but also with the distance to major watercourses and solar irradiation. Based on the considered variables, the predictive map confirms that the foothill and gentler slopes facing E-SE areas have suitable characteristics for stable settlement. Moving towards the more inland and higher altitude territories, the non-event areas increase proportionally, especially along the ridges, and the steeper, north-facing areas.

A model that can generate a spatial pattern with predictive implications, cross-validated by the researcher's contextual interpretation, provides greater awareness of the possible extension of the settlement pattern, human-environment dynamics, and past landscape use to direct future research and field validation on lesser-known areas.

3 COMPUTING THE MOUNTAINS' PAST: CHALLENGES OF MOUNTAIN LANDSCAPES AND COMPUTATIONAL METHODS. EXPERIENCES FROM ITALY, UK AND SPAIN

Abstract author(s): Domingo Ribas, Guillem - Carrer, Francesco (Newcastle University) - Álvaro, Karen (Universitat de Barcelona) - Turner, Sam (Newcastle University)

Abstract format: Oral

Mountain landscapes are at the core of many narratives about the human past, but their rugged and frequently forested nature have traditionally hindered the identification and recording of the traces that can be used to understand it. As a result of this, archaeologists have developed and adopted new methodological and theoretical perspectives in order to overcome such limitations and study the past of these landscapes. New digital tools and computational techniques, together with revised field survey strategies and ethnoarchaeological approaches, have significantly helped archaeologists to broaden their perspectives on data collection and management. This has permitted going beyond traditional field surveys, historical cartography and documents, as well as already existing archaeological grey literature and ethnoarchaeological and ethnographic works.

This paper presents three examples of how an interdisciplinary suite of approaches has been key when working in three different areas: the Aspromonte Massif (Calabria, Italy), Devon (UK) and the Upper Arlanza Basin (Burgos, Spain). With a particular focus on the computational methods employed to analyse the data collected, we will illustrate how the research aims in each territory, as well as their characteristics, have determined the strategies of gathering, managing and analysing the data. At the same time, this paper will also revolve around some of the problems and challenges that have emerged when collecting data on these mountain spaces, as well as how computational methods have been employed to address such issues.

4 MODELLING HILLFORT COMMUNITIES IN MOUNTAIN ENVIRONMENTS

Abstract author(s): Fontana, Giacomo (University College London; Royal Netherlands Institute in Rome)

Abstract format: Oral

This paper discusses a transferable approach to studying hillfort communities in mountain environments, using Samnite society (first millennium BCE) as a case study. It integrates a range of spatial and non-spatial computational methods, and combines both qualitative and quantitative data, to address biases and long-standing debates on the non-urban nature of Samnite society and its relation to its specific mountain landscape. LiDAR-based remote sensing is used to create a new, more representative dataset of hillfort sites across 15,300 sq.km of south-central Italy. Spatial and multivariate cluster analyses and a novel labour-cost model of polygonal masonry can then be used to investigate labour costs and site types moving beyond the urban labels that often undermined the study of landscapes perceived as marginal. Finally, point process models highlight site location preferences and clustering taking into account the unique nature of the environment. In combination, such techniques and fresh evidence shed new light on the non-urban character of Samnite society and its resilience under Roman expansion, in which the mountain landscape played a critical role. Entirely written in Python and R and subsequently integrated with Quarto, the overall approach is also replicable and suitable for cross-regional and cross-cultural analysis in other mountainous areas and with different typologies of sites.

395 MERC FORUM: COMPARATIVE ISLAND ARCHAEOLOGIES IN MEDIEVAL EUROPE

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Jervis, Ben (Cardiff University) - Spangen, Marte (UiT The Arctic University of Norway)

Session format: The MERC forum features 3 or 4 invited keynote speakers, forming one of the 2 events on the scientific programme organised centrally by the MERC Committee.

Islands are contradictory spaces. They are places of contact and isolation, simultaneously at the margins reachable only by water or via a bridge or causeway, but also central to the defining processes of the medieval period such as pilgrimage, commerce, warfare, industry, urbanisation and colonisation.

In this year's MERC Forum we invite our speakers and audience to reflect on what islands were for, and what islands did, in the Middle Ages. Our speakers are drawn from across Europe and will be discussing a range of island contexts, from coastal islands to those situated on inland rivers. In particular the session seeks to enable the emergence of a comparative approach to island archaeology, to understand how the social, economic and religious roles of islands intersect and diverge, how distinctive island ecologies shaped experiences of these places and to consider the resonances and distinctions between those living in island environments across medieval Europe.

1 DRUMCLAY CRANNOG POST-EXCAVATION PROJECT

Abstract author(s): O’Neill, John (Irish Archaeological Consultancy)

Abstract format: Oral

Drumclay crannog in County Fermanagh in Northern Ireland was excavated (by Declan Hurl and Dr Nora Birmingham) during construction of the A32 link road in 2012 and 2013. Post-excavation analysis is ongoing by Irish Archaeological Consultancy Ltd, under the guidance of the Historic Environment Division of the Department for Communities, NI.

Located within fen peat on the margin of an inter-drumlin lake, Knockalough, use of the site began just after 800 AD. The fen was entirely unsustainable as a construction surface and as the mass of wood, stone and clay accumulated, it continuously sank below the watertable. The human commitment to remain at Drumclay, despite its obvious flaws, meant that the ground was resurfaced and houses rebuilt every few years: 3m+ of archaeological deposits accumulated in 200 years, a sequence closely dated by alder, oak and ash tree ring chronologies. By 1600, another 2m of archaeologically-rich layers had formed. Use of the site saw periods of intense use, abandonment and changes of use, including one late medieval burial. A range of craft and agricultural activities can be identified amongst the eclectic assemblage of finds and samples, as well as cultural elements such as musical instruments, collected antiquities, gaming boards and pieces, and other aspects of contemporary life that generally are not preserved.

Drumclay produced 1000+ wooden artefacts, gold, copper alloy, iron, amber, glass, leather, textiles, bone, antler and stone tools and are being complemented by detailed studies of faunal, insect and parasite assemblages, plant macro-fossil, wood, pollen and other palaeoenvironmental analyses. The current Drumclay Crannog Post-Excavation Project is in the process of completing an initial monograph describing the archaeology of the site, the architectural forms present, environmental conditions and cultural assemblages. This lecture will provide an overview of the excavated archaeological evidence, specialist analyses and emerging themes.

2 SIMILAR, BUT DIFFERENT: SAAREMAA AND GOTLAND IN THE 13TH CENTURY

Abstract author(s): Mägi, Marika (Foundation Osiliana / Tallinn University)

Abstract format: Oral

Saaremaa (Estonia) and Gotland (Sweden), two biggest islands of the Baltic Sea, are, together with the adjusted islands and islets, of almost the same size. They have frequently been called sister islands, although separated by 120 km. Both are rich in prehistoric evidence. Especially after the 7th century, when sail was taken into use in the Baltic and crossing the open sea became commonplace, material culture in the islands synchronized in certain degree. The contacts were mutual, embraced movement of people, artefacts and ideas.

Both islands had restricted land resources, which caused that the accumulation of power and riches was often based on other sources but the ownership of arable land. Most researchers agree that international trade played a major role in Gotland, that is located in the middle of the sea, at the crossroads of sailing routes. The development of central places resulted in the emergence of a medieval town in Visby that in the 13th century was predominantly German. Centres in the countryside formed a parallel system that clashed with the town in 1288.

Saaremaa is located close to the mainland that was not the most favourable position for the emergence of big trade centres. It was the navy and control over water routes that ensured Saaremaa its prominent power position. Although earlier known because of overseas raids, the 13th century Saaremaa was characterised by wars on the island itself. However, the presence of Germans in Saaremaa was much more limited than in Gotland, and no medieval towns were established. The former centres continued throughout the 13th century, and gradually lost their importance after that.

The speech focuses on the results of the last decades’ excavations in Saaremaa, interpreting them in a broader context, especially in comparison with Gotland.

3 AN ACCESSIBLE COASTAL ISLAND: VENICE’S EARLY MEDIEVAL SPACES BETWEEN CONNECTIVITY AND COERCION

Abstract author(s): Calaon, Diego (Ca’ Foscari University)

Abstract format: Oral

The ontology of Venice has often been connected with its insular nature as a proxy to explain the connectivity and the long-distance commercial and economic relationships that Serenissima developed over the centuries. “Being an island” has been one of the main subjects of study of the vast scholarly production around the early history of Venice, queen of the seas.

Archaeological research and the topography of the early north Adriatic settlements allow us to reconsider the early Venice, detaching it from the importance of the island “idea” and, on the other side, rethinking the role of the availability or non/availability of free and accessible agricultural land in defining the social and economic environments.

Recent analyses have demonstrated the relative non-isolation of Venice in its area. The early Venetian topography should be considered a massive, connected waterscape context, with constant sea/lagoon routes and local circulation of people and goods. The notion of “island” probably had no particular meaning for the early Venetians, moreover in terms of identity. Conversely, the very nature of the wet coastal landscape, with limited availability of free or new land and limited capability to ensure some essential elements (such as fresh drinkable water, food resources other than fish, etc.), have played a central role in controlling labour. The idea of the “island” as a space of coercion, control, and power could be a different ontology that helps us to understand early Venice.

4 SHIFTING CONTEXTUALITIES OF MARITIME SETTLEMENT ON ISLANDS ALONG THE OUTER COAST OF MEDIEVAL NORTHERN NORWAY

Abstract author(s): Wickler, Stephen Kent (Arctic University Museum of Norway, UiT Arctic University of Norway)

Abstract format: Oral

Since initial settlement more than 11,000 years ago, marine resources have been critical for sustaining coastal and island settlement in northern Norway where specialized fishing sites were essential nodes in a complex web of maritime interaction and interdependence. The significance of such sites increased dramatically from the late Viking Age to the high Medieval period (ca. 950-1300 CE) as essential components in expanding maritime trade and exchange networks centered on stockfish production and the commercialization of cod fisheries. Although islands along the outer coast of medieval northern Norway represented central locations for maritime settlement and trade, individual sites in these locations display complex and variable trajectories. In this presentation, I explore two medieval island sites facing the open ocean that reflect very different sequences within an overarching maritime context. The Finnes site on Ingøy along the northwestern margin of Finnmark, was a seasonal marine exploitation base for the indigenous Sámi up until the 13th century when it was replaced by a permanent Norse fishing settlement. The Kvalnes site lies on the exposed outer shore of Moskenes Island in the Lofoten archipelago. Here a thriving early medieval fishing settlement with access to imported items linked to the stockfish trade experienced a dramatic environmental transformation into a marginalized location without access to the sea. By the late medieval period, the settlement was buried under actively accumulating windborne sand deposits. These case studies illustrate the diverse nature of fishing settlements in exposed outer coastal settings and the need for a more explicit thematic focus on island archaeology in Norway.

398 BODY IDEALS AND IDEAL BODIES: MATERIALITIES OF AESTHETICS AND THEIR SOCIAL ROLE IN NON-LITERATE SOCIETIES

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Gramsch, Alexander (Römisch-Germanische Kommission - RGK) - Kerk, Lukas (Universität Münster) - Matić, Uroš - Weiss-Krejci, Estella (Austrian Academy of Sciences)

Session format: Regular session

The ‘archaeology of the body’ explores human remains not only as carriers of information on nutrition, mobility, or biological kinship, but also as a source for research into the role of the body in shaping social relations in ancient societies. Corporeal aesthetics and ideals can be understood as analytical concepts, as they played a decisive role in the shaping, perpetuating, and changing of social identities, and gender norms in particular. Following on from the session “Beautiful bodies: Gender, bodily care and material culture in the past” at the 2017 EAA Annual Meeting, organised by Uroš Matić and Sanja Vučetić, this session focusses on new theoretical and methodological approaches and case studies from non-literate societies (e.g., prehistoric and ethnographic). The aim is to develop a better understanding of how material culture works in creating, maintaining, or transforming bodily aesthetics and ideals. We invite contributions that critically engage with the possibilities of interpreting such culturally relative ideas, drawing on case studies from a wide range of archaeological, ethnographic, or iconographic source material. Papers may consider ‘body-related’ objects, iconography, and ‘body-related’ practices. Objects of personal hygiene (e.g., toiletry sets) or those linked to (self-) representation (e.g., jewellery, clothing, and hairstyles), prosthetics or other objects enabling or facilitating participation in social interactions may be scrutinized as well as statuettes and stelae, depictions on pottery, stone, or other media. ‘Body-related’ practices may include permanent or impermanent modifications, but also the treatment of dead bodies. We are interested in relations between aesthetics and sex, gender, power, hegemony, subversion, as well as intra- and inter-group social relations. The focus should be on contexts, actors, and perceptions, with particular emphasis on how transformations in the presentation or ‘staging’ of the body affect social positions and relations as well as individual or group identities.

1 BODY IDEALS AND IDEAL BODIES: AN INTRODUCTION

Abstract author(s): Gramsch, Alexander (RGK - Romano-Germanic Commission DAI) - Kerk, Lukas (Universität Münster) - Weiss-Krejci, Estella - Matic, Uroš (Austrian Archaeological Institute)

Abstract format: Oral

Understanding the ‘archaeology of the body’ as research into the role of the human body in shaping social relations in ancient societies, we want to introduce this session by presenting ideas on how corporeal aesthetics and ideals can be understood as an analytical concept. Focusing on non-literate societies we will outline approaches for a better understanding of how material culture works in creating, maintaining, or transforming bodily aesthetics and ideals. This includes objects of personal hygiene (e.g., toiletry sets) or those linked to (self-) representation (e.g., jewellery, clothing, and hairstyles), prosthetics or other objects enabling or facilitating participation in social interactions. Moreover, material culture also serves to reconstruct ‘body-related’ practices such as permanent or impermanent modifications, but also the treatment of dead bodies. Also iconographic material such as statuettes and stelae, depictions on pottery, stone, or other media can be a source for analysing body ideals and ideal bodies. We want to point out possible relations between aesthetics and sex, gender, power, hegemony, subversion, as well as intra- and inter-group social relations. And we want to explore how to understand transformations in the presentation or ‘staging’ of the body as related to social positions and relations as well as to individual or group identities.

2 BODY REPRESENTATIONS ON NEOLITHIC STELAE IN NORTHERN ITALY

Abstract author(s): Perifanakis, Jacqueline (Swiss National Museum)

Abstract format: Oral

Neolithic stelae are likely to have been created as ancestral images and depict individuals, whilst embodying the values and traditions of a group, and their collective memory.

Although some traits are intrinsic to particular regions, there are similarities in the manner the human bodies and their attributes are depicted. Specific examples of stelae from Trentino-Alto Adige in Südtirol and Lombardy will be presented in this contribution to show how the people of these neighbouring valleys seemed to have very similar costumes, jewellery and weapons, but had different emphases in the depiction of human bodies.

The sculptures in Trentino are characterized by their three-dimensionality. Male stelae are shown armed to the teeth and wear single-strand necklaces, while women were adorned with prestigious pectoral ornaments and a diadem with pendants. Carved-out breasts leave no doubt about the gender of these stelae. In comparison, the examples in the Valcamonica and Valtellina valleys in Lombardy rarely show a human silhouette. What was important was not the representation of the body itself; instead, the human form is only indicated by the arrangement of motifs and sometimes by an elaborated shoulder. Interestingly, many of these sculptures in Lombardy are multiphase; they have been reworked several times, which means that even depictions of men and women could alternate on the same stone.

The examples from the two above-mentioned regions show that the creators of the stelae used a standard template for composing a body of different elements. The most important part is the upper body, where the differences between men and women are apparent. Real human bodies, as burials in contemporaneous necropolises and the so-called Iceman from the Ötztal Alps, show a comparable composition of and focus on material things. This leads to the assumption, that stelae represent a strongly schematised ideal image of the human being.

3 MALE IDENTITIES IN THE SOUTH-EASTERN EUROPEAN CHALCOLITHIC. IDEAL BODIES IN THE ANTHROPOMORPHIC PLASTIC ART OF THE CUCUTENI-TRIPOLYE CULTURE

Abstract author(s): Turcanu, Senica (“Moldova” National Museum Complex of Iasi Romania)

Abstract format: Oral

The subject of our paper are the modalities in which gender and cultural male identity are expressed. The space we refer to covers the area of the Cucuteni-Tripolye cultural complex of the V-IV millennia BC.

Archaeological discoveries provide little data on male identity and, in general, on the role of men within the social structures of the Cucuteni-Tripolye communities. These societies practised archaeologically “invisible” funerary rituals. Therefore, an analysis of the funeral inventories is not possible. That is why the main source for our presentation are the anthropomorphic statuettes. These allow us to outline male gender identities and cultural identities compared to similar female representations.

Starting from the idea that the anthropomorphized miniature world is the symbolic, idealized representation of the real one, the presentation aims to analyze and systematize the information the anthropomorphic statuettes provide. Our analysis will focus on the particularities of representation from a morphological standpoint (gestures, postures

or especially highlighted anatomical details) and the ornamentation of the body (hairstyles, objects of adornment and clothing accessories, colour symbolism, etc.) characteristic of the masculine plastic representations. This visual language will help us identify how male gender and male cultural identity affect social positions and relations as well as individual or group identities.

Also, the spread of the respective representations in settlements situated far away from each other points to their important, symbolic role within a vast geographical area, proving the community's vision of the ideal male body.

4 BODILY PERFORMANCES AND IDEALS IN THE MINIATURE SEAL IMAGERY OF BRONZE AGE AEGEAN

Abstract author(s): Andreovits, Tatiana (Institut für Klassische Archäologie, Heidelberg)

Abstract format: Oral

The human body is considered an active agent through which humans perceive the world, collect experiences and memories that differ depending on space and time. The embodied involvement with the environment, with other people and with the material culture, constitutes the way in which social identity is formed and expressed. The body entangles with the social and cultural environment through a multisensory process and thus comprises a means for the (re)construction of identities. In the proposed presentation, focus will be given on the representation of the miniature body on Bronze Age Aegean seal images. Seals and sealings with human body representations were common iconographical motifs during the Middle and Late Minoan period. However, the depiction of the human body is not uniform and stable throughout the Bronze Age, but differs depending on the geographical and chronological context, the selected representational forms and engraving techniques, the different materials and tools. Consequently, the human body is depicted abstract or detailed and realistic, sometimes emphasizing on the expression of gender, age and social identities. The human figures are adorned and dressed according to the everyday practices or ceremonial acts performed by the subjects, expressing the multiple and ever-changing bodily aesthetics and ideals. Through the study of the different bodily performances and aesthetics represented on Minoan seal images, the aim is to reconstruct the formation of identities (either individual or communal) performed by the members of Bronze Age Aegean communities. Human bodies and seals are mutually constructed through a proximal and multisensorial entanglement, contributing to the formation of the subject's identity and individuation both in past and present societies.

5 THE MOURNING BODY: DRESS CODES, MUTILATION, AND NUDITY DURING THE FUNERARY PERIOD

Abstract author(s): Weiss-Krejci, Estella (Austrian Archaeological Institute; University of Vienna)

Abstract format: Oral

Unlike the buried dead body, which sometimes leaves archaeological traces of treatment and clothing, at least under favorable conditions, the body treatment and attire of the bereaved during the mourning period is archaeologically elusive. After death, social life is often interrupted for the bereaved, as there is usually a requirement to mourn. What mourners may and may not wear can be governed by conventions that reflect the economic status, kinship ties, and ideology of the bereaved. As ethnographic examples have shown, mourning attire often deviates from, or even completely negates everyday bodily ideals and can range from wearing certain colors and materials of uncomfortable texture to mutilation and nudity. This paper uses selected examples from around the globe to discuss methods that allow us to address the issue of mourning for the prehistoric past. Identifying and analyzing mourning contexts on stone monuments, pottery, and other objects may be one way to understand how the bereaved treated and dressed their own bodies during the time of mourning.

6 SHIFTING BODILY AESTHETICS AND SOCIAL CHANGE IN BRONZE AGE CRETE

Abstract author(s): Simandiraki-Grimshaw, Anna (Museum of London Archaeology - MOLA; Independent Researcher)

Abstract format: Oral

The construct of bodily ideals has been extensively explored in archaeology more generally and for Aegean prehistory more specifically. Relevant studies have and continue to focus on the varied representation of the human body (artefactual bodies), as well as the treatment/manipulation and, more recently, the osteoarchaeology, of extant burials (physical bodies). Shifting bodily aesthetics have been explored for Bronze Age (Minoan) Crete through mostly somewhat distinct methodological categories (e.g. figurines, frescoes, burial practices, grave goods), which have sought to categorise predominantly adornment, gender and status, and especially the formation and interaction of elite groups.

These explorations have been very useful in systematising our knowledge of bodily representations in the wider sense. However, relatively few have attempted to synthesise data towards an understanding of the tropes and reasons for

specific interplay of the human body and/as material culture for aesthetic agendas. More importantly, detectable aesthetic shifts between major Minoan phases, already recognised as indicators of social shifts, have not been problematised enough beyond changes in fashion, customs or the emergence/composition of social elites.

This paper will start by arguing for a combination of available data, proposing ways to break down methodological barriers. It will continue with some case studies which will illuminate two aspects of those shifts: a) hitherto underplayed or undetected correlations between some representational material culture and the osteoarchaeological record; b) some potentially hidden corporeal agendas behind often seemingly straightforward expressions of aesthetics (e.g. clothing, bodily ideals etc.). Ultimately, the paper will propose that, by scrutinising through an embodied approach the 'staging' (and non-'staging') of the body in Minoan Crete during transitional phases, we can understand deeper social changes happening below the fluctuating surface of fashions, conspicuous consumption and burial practices.

7 THE POLITICS OF AESTHETICS: MAKING BODIES IN IRON AND VIKING AGE SCANDINAVIA

Abstract author(s): Aslesen, Elisabeth - Eriksen, Marianne (University of Leicester)

Abstract format: Oral

This paper draws on anthropomorphic imagery in first millennium Scandinavia to explore aesthetic ideals as well as politics of bodies. Bodies — whether of flesh and blood or cast in metal — are always immersed in worlds (sensu Haraway 1997). The body is not a biological fact, a neutral canvas that we 'dress' in culture. Rather, bodies emerge as products of specific histories: our bodies hold entire worlds in how we run, sleep, have sex, interact (Mauss 1973); that is, what we think our bodies could and should do.

Anthropomorphic imagery was executed in wood, stone, gold, silver, and bronze in Iron and Viking Age Scandinavia, however these figurines and depictions are conventionally studied in a visual and representational manner, rather than as material objects with specific histories of making, engagement, display, and deposition. We draw on ongoing work from the ERC project BODY-POLITICS to explore not only what depictions of bodies from Iron and Viking Age Scandinavia 'represented', but how miniature bodies and human bodies co-acted. Figurative imagery expressed and shaped ideas and concepts of human bodies, were used to adorn human bodies, and were handled and manipulated by human bodies. In like manner, these objects acted back onto the human body, imposing certain ways of moving, interacting, and thinking. Ultimately, we argue that these objects did worlding work: they were regulatory ideals communicating specific body ideals while suppressing others.

8 EMERGING FROM ASHES. BODY IDEALS AND IDENTITIES THROUGH THE ETRUSCAN ANTHROPOMORPHIC URNS FROM TOLLE (TUSCANY, ITALY, 7TH-6TH CENT. BCE)

Abstract author(s): Bischeri, Mattia (Dipartimento di Studi Umanistici, Università per Stranieri di Siena) - Alhaique, Francesca (Servizio di Bioarcheologia, Museo delle Civiltà) - Cavazzuti, Claudio (Dipartimento di Storia, Culture e Civiltà, Alma Mater Studiorum – Università di Bologna) - Sperduti, Alessandra (Servizio di Bioarcheologia, Museo delle Civiltà)

Abstract format: Oral

Anthropomorphizing the urn, namely molding the cinerary as a human body, is a relatively common funerary custom of cremation burials in some ancient communities. This practice is likely connected to reintegrating the body after the destructive action of the fire and preserving its materiality in another form. In Italy, especially in the Etruscan territory of Clusium, there is the widespread use of this practice between the 7th and 6th c. BCE as is demonstrated by the impressive necropolis of Tolle, which has yielded 121 intact burial contexts with anthropomorphic urns (the so-called 'canopic urns'). This kind of cinerary container represents a human body, as an ideal portrait of the dead's body, where the gender identity is, in many cases, iconically materialized by the physical traits on the lid and the body of the urn (e.g. hair, beard, breast etc...). In order to test the consistency between the socially ascribed identity and the biological profile of the dead, we conducted an interdisciplinary study integrating the canopic urn features (styles and varieties of the iconography) and archaeological data (funerary rite, grave goods, status indicators, chrono-spatial distribution) with bioarchaeological data from human remains (minimum number of individuals, sex and age-at-death) as well as from ritually associated fauna. Looking at the canopic urns in a diachronic and synchronic view, we assessed also a conservative phenomenon regarding the aesthetic of the urn located within the same burial clusters, through which the social, gender and family identity seems to transfer along three generations at least. The results allowed us to describe complex patterns of funerary behaviours, gendered role differences, and biosocial construction of identities, viewing how a large Etruscan community images itself afterlife through the aesthetic materiality of the urns.

9 BODYSCAPES IN EARLY CERAMIC CHILE (~200 BCE - 1200 CE): AN EXPLORATION OF ANTHROPOMORPHIC VESSELS

Abstract author(s): Campino, Danae - Armstrong, Felipe (Museo Chileno de Arte Precolombino; FONDECYT 11221116; FONDECYT 1200276)

Abstract format: Oral

Around 200 BCE, a number of new technologies emerged simultaneously in a vast region of today's Chile, signalling significant social and cultural transformations of hunter-gatherer populations. These shared features included the adoption of pottery, the first horticultural practices, decreased mobility, greater investment and complexification of funerary rituals, production of special tools for smoking practices, production of stone beads, use of labrets, and the production of anthropomorphic vessels. The emergence of these technologies suggests that the changes impacted the production of material culture. In this paper we will discuss anthropomorphic vessels as a means to characterise this process of transformation through the consideration of the human body as a relevant referent in the production of visual culture. We argue that the aesthetic choices involved in the manufacture of these body-pots, convey local particularities in the construction and conception of human bodies, prioritising certain body parts, as well as different visual effects; developing particular aesthetic choices to materialise different but related human-like vessels.

The groups we deal with for this period lived from the Semiarid region of Chile to the South of the country (26° - 43°Lat. S), developing local traditions related to the very different geographical and weather conditions. Thus, the existence of wider cultural patterns ought to be addressed and discussed. This work seeks to problematize the anthropomorphic ceramic vessels, in order to establish the existence of a new way of conceiving and living bodies, linked to the new technologies evidenced for this period, as well as to discuss the possible existence of a widespread bodyscape proper to this Early Ceramic Period (~200 BCE - 1200 CE). Our work accounts for the existence of a shared tradition in a vast area, opening the possibility of better understanding the processes traditionally understood as an increase in 'social complexity'.

10 BODYSCAPES AND EMPIRE. THE IMPACT OF THE INKA DOMINION ON LOCAL ANTHROPOMORPHIC POTTERY FROM NORTH-CENTRAL CHILE

Abstract author(s): Mansilla, Luis (Magíster en Arqueología, Universidad de Chile; FONDECYT 11221116; FONDECYT 1200276) - Armstrong, Felipe (Museo Chileno de Arte Precolombino; FONDECYT 11221116; FONDECYT 1200276)

Abstract format: Oral

Around 1.470 AD, the Inka Empire annexed what is now North-Central Chile to its dominion. This rapid and intense collision implied radical changes on local production patterns, and an intensification on agricultural, metallurgic and pottery production dynamics. Scholars have shown that this process was not violent based on an understanding of shared complementing Andean traditions that facilitated acculturation as seen on pottery. Despite this being one of the most discussed topics on local archaeology, little is known about the repercussions that this annexation of territories had on the bodies of the local inhabitants of the region, known today as Diaguitas. Along with the economic intensification came distinct ideational elements originating in the Central Andes, meaning the Inka brought a new way to display, to be and to make bodies. The body production on different media (e.g., rock art and pottery) allows an insight into the existence of culturally and contextually specific normative models for the Diaguita prior to and after the Inka arrival. A full examination of body parts complemented with a traditional vessel analysis allowed for the identification of certain trends and significative associations between the presence and absence of singular anthropomorphic elements and distinctive vessel attributes, as well as an intra and inter period comparison showing differences on the body production before and during the Inka regime. Based on this examination, this paper discusses the construction of a new bodyscape (sensu Geller 2009) that shares some principles with the former, but also expressing new ways of displaying bodies in the context of Inka imperialism.

This paper is funded by Research Grants FONDECYT 11221116 and 1200276.

11 BLING FOR THE AGES - GENDERED JEWELRY AND DRESS ADORNMENTS IN PREHISTORIC BURIALS IN CENTRAL EUROPE

Abstract author(s): Pape, Eleonore (Max Planck Institute for Evolutionary Anthropology, Department of Archaeogenetics)

Abstract format: Oral

Jewelry or dress adornments play a fundamental role in the identification of gender in the study of prehistoric burials: their type and function, their finding location within the burial upon excavation, or even the amounts of such objects

per individual often represent a criterion for the identification of archaeological gender. We sometimes even consider the mere occurrence of jewelry in burials a feminine attribute per se.

We know, however, that our perception of gender-norms in burials of illiterate societies of the past can be affected by misconceptions and methodological flaws, especially when we attempt to identify the biological sex and the archaeological gender of individuals: by the fallacy of circular argumentations when bioanthropological and archaeological data are not assessed independently and by the difficulty to assess the reliability of osteological sex estimates. What we do not know, is to what extent. A bioarchaeological approach may offer some solutions to some of the practical issues mentioned: e.g. determine error margins of osteological estimates, verify data that may have been generated by means of circular argumentation and explore the portion of inhumed populations that is not associated with preserved archaeological 'gender'-markers.

Based on selected case studies from published, large inhumation burial sites in Central Europe ranging from the Neolithic to the Middle Ages, I will present how recurrent jewelry and dress components actually are within burial communities of different regions and areas, with a special focus on their association with biologically sexed individuals. I will finally discuss to which extent such attributes can qualify as gender-normative bodily aesthetics, and how much room there is for diversity and individuality.

12 THE MATERIALITY OF ANDEAN BODY MARKING: PERSPECTIVES FROM EUROPEAN AND NORTH AMERICAN MUMMY COLLECTIONS

Abstract author(s): Gerst, Robin (Goethe-Universität Frankfurt am Main) - Deter-Wolf, Aaron (Tennessee Division of Archaeology)

Abstract format: Oral

Tattooing was a widespread cultural practice among Pre-Columbian societies of western South America, reaching back to at least 2500 BCE. Archaeological evidence for these traditions is attested to on the preserved skin of hundreds of mummified individuals found at sites throughout the Pacific coastal deserts of Perú and Chile. Many of these remains made their way into Western museum collections during the 19th and early 20th centuries, and have since remained unexplored by modern archaeological science. This presentation describes research by the authors to catalogue tattooed Andean mummies in European and North American museums. To date our investigations include digital documentation of more than 140 previously-unpublished tattooed mummified specimens. This research, while still ongoing, constitutes one of the largest data sets of preserved, tattooed archaeological remains from any region on Earth, and provides critical new data for assessing body decoration practices in the ancient Andes.

Our findings to date show that this phenomenon had a wide distribution in different archaeological cultures of the Andean coastal deserts, including from well-known sites such as Pachacamac, Ancon, and Chancay. This presentation will include observations on the distribution, orientation, and arrangement of tattoos on the human body.

We will begin by creating an iconographic catalogue that will show the motifs, patterns, and figures used and their use in other archaeological media such as textiles, ceramics, and wooden objects. This comparison facilitates initial conclusions as to the meanings and cultural roots of this phenomenon.

This gives us the first comprehensive insight into an emic conception of the body, corporeality and body modification in the ancient Andes in general, as well as for specific cultures.

13 A PRECIOUS BURDEN: MULTIDISCIPLINARY APPROACH TO BODILY TECHNIQUES OF CHILD CARRYING IN THE NILE VALLEY

Abstract author(s): Carballo Pérez, Jared (Departamento de Geografía e Historia, Universidad de La Laguna) - Hall, Rachael (Laboratory for Human Osteoarchaeology, University of Leiden) - Matić, Uroš (Österreichisches Archäologisches Institut, Österreichische Akademie der Wissenschaften) - Schrader, Sarah (Laboratory for Human Osteoarchaeology, University of Leiden)

Abstract format: Oral

Ancient Egyptian, Nubian and Syro-Palestinian Bronze and Iron Age iconographies indicate that women in these societies used different body techniques to carry children. Whereas Egyptian women used slings to carry a single child, Syro-Palestinian women carried several children in baskets on their backs. Nubian women also used baskets to carry several children, however, with the help of a tumpline attached to the basket and placed over the top of the head. These bodily techniques of child care and carrying do not only allow women to perform certain actions, but also impede them from performing others. Moreover, these different bodily techniques of child carrying can potentially form bodies in different ways, leaving traces on the skeletons. Some bone markers of physical activity could help us approach these embodied loads, such as the tumpline deformations on crania, the vertebral pathology distribution, and asymmetrical musculoskeletal changes in the clavicle. In this paper, we propose a pilot study using the aforementioned iconographies and bone markers of daily life on the skeletal collection of the Nubian cemetery from

Abu Fatima (2500 – 1500 BCE). The contextual study of these „body-related“ practices will allow us to provide complementary visions of how women embodied child care and how the aesthetic perceptions of these close social relationships were like.

14 ARTIFICIALLY DEFORMED SKULLS IN THE LIGHT OF BODY IDEALS: TWO CASES FROM THE GREAT MIGRATION PERIOD (SERBIA)

Abstract author(s): Djukic, Ksenija - Mikasinovic, Veda - Sarkic, Tamara - Djuric, Marija (Center of Bone Biology, Faculty of Medicine, University of Belgrade)

Abstract format: Oral

Artificial cranial deformation (ACD) is defined as a biocultural process that includes the application of an external force on the cranial bone with the aim of modifying the physiological patterns of neurocranial growth. This should be applied in the infant period, given that the cranial bones are soft and easily modified. The reason for the cranial modification is recognised as either specific custom of some ethnic identification and membership, a status symbol within a population or as being linked to certain preconceived ideas of bodily decoration and beauty. Recent studies have additionally explained this custom in the context of complex processes of creating a social identity through cultural contacts and migrations. This biocultural phenomenon appeared independently in different regions of the world, and ACD has been recorded on all continents, in different cultures, and different periods. However, various reasons have been listed as potential motives for ACD, but one is certain, people used their own bodies to send a message to their immediate or wider social environment. The aesthetics achieved in this way were actually unchosen by the person who had a deformed skull, suggesting that this was a physically imposed part of a person's identity, accentuating the role of the body in social relations. In order to gain a clearer picture of the social fabrics of ancient societies, especially in those that were non-literate/illiterate, comprehensive analyses of the biological and social contexts of each case individually would be necessary. Therefore, based on the bioanthropological and burial assemblage analyses, this study looked closely at both the biological and social frameworks of two ACD cases of Great Migration Period from the territory of modern-day Serbia.

399 BEYOND ARCHITECTURE: NEOLITHIC TOMB BUILDERS IN CONTEXT

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Smyth, Jessica (University College Dublin) - Geber, Jonny (University of Edinburgh) - Olet, Lilly (University of Bristol)

Session format: Regular session

The inspiration for this session comes from the ‘Passage Tomb People’ project (IRC Laureate 2018-2023), currently investigating the social drivers of passage tomb construction in the Irish Sea area in the later Neolithic. The connectedness of these tombs (in terms of iconography, building methods, and material culture) has long been recognised, but to date there has been little targeted research on the societies that built them. Erected several centuries after the arrival of farming in each region, these monuments may be responses to economic stress or, equally, the result of surplus and increasing social competition. In this session we welcome fresh approaches to exploring the societies behind the megalithic architecture of Neolithic Europe, in particular contributions that probe the connections between monument construction and wider changes in social, cultural and technological practice. Did similar factors trigger similar architectural responses in different areas? Papers can draw on a range of methodologies or analytical techniques – from osteology to biomolecular archaeology and material culture studies – but must have ‘people’ at their core and be framed in terms of the communities and social networks that supported these extraordinary feats of engineering, logistics and belief.

ABSTRACTS

1 LINKING ANCESTORS WITH MONUMENTS: ENGAGING WITH THE DEAD IN NEOLITHIC IRELAND

Abstract author(s): Geber, Jonny (University of Edinburgh)

Abstract format: Oral

The Neolithic passage tombs of Ireland have been the subject of interest for generations of scholars, but it is only in relatively recent years that the human remains (the people) in these monuments have been considered in more than quantitative terms. Using anthropological interpretative frameworks, how the living approached the dead (and death) in Neolithic Ireland is discussed using the recent and current analyses of the human remains from the impressive passage tomb complex at Carrowkeel (Co. Sligo) and the winter solstice aligned passage tomb at Knockroe (Co.

Kilkenny). The intentional processing of the dead—through disarticulation/dismemberment, fragmentation and cremation—is evident on both these sites but expressed differently. At Carrowkeel, both unburnt (9.7kgs) and cremated bones (5.7kgs) were found, while Knockroe contains almost exclusively (highly fragmented) cremated remains (c. 200kgs). To what extent do the human remains help us understand the complexity of the passage tomb tradition? How does the treatment of the dead reflect the beliefs and worldview of the people in Neolithic Ireland? These questions are likely to remain unanswered. However, a more holistic approach when examining and interpreting human remains from passage tomb contexts can help to elucidate social paradigms from a distant past.

2 I NEED A HERO? EXPLORING DIVERGENCE IN MORTUARY PRACTICE IN MIDDLE NEOLITHIC IRELAND

Abstract author(s): Smyth, Jessica (University College Dublin) - Faillace, Katie - Madgwick, Richard (Cardiff University) - Olet, Lilly (Organic Geochemistry Unit, University of Bristol) - Knowles, Timothy (Bristol Radiocarbon Accelerator Mass Spectrometry Facility, University of Bristol) - Evershed, Richard (Organic Geochemistry Unit, University of Bristol)

Abstract format: Oral

Cremated commingled deposits of human bone are a well-recognised feature of mortuary practice in Neolithic Ireland (c. 4000-2500 BC). They are associated with a range of different megalithic monuments, with some mid-fourth millennium BC (Middle Neolithic) passage tombs found to contain very sizeable quantities of cremated bone (e.g. Geber, this session; O'Sullivan 2005). Around 3600 BC, when the earliest passage tombs begin to be constructed in Ireland, a parallel mortuary tradition occurring outside the main distribution of megalithic tombs is also recorded: large earthen mounds with a stone cist at their centre, containing the remains of one to three inhumations, all male (where biological sex can be recorded). These monuments are called 'Linkardstown-type mounds' after a type site excavated at Linkardstown, Co. Carlow. Previously included in a radiocarbon dating programme targeting single Neolithic burials (Brindley & Lanting 1989/1990), this fascinating corpus of sites is revisited in the light of multi-isotope analysis and new radiocarbon dates, part of the wider 'Passage Tomb People' project.

3 LONG BARROWS IN BOHEMIA. FORM AND PERCEPTION OF FUNERARY STRUCTURES AS ANCESTRAL MONUMENTS OF A LONG TERM TRADITION

Abstract author(s): Kristuf, Petr (University of West Bohemia) - Turek, Jan (Charles University Prague) - Hejcman, Michal (Jan Evangelista Purkyně University in Ústí nad Labem)

Abstract format: Oral

Our recent project focusses on Late Neolithic long barrows as places of ancestral worship and representation of communal and personal identities in the landscape of Central/North Bohemia. The long barrows are commonly interpreted as funerary/religious sites, perhaps erected as part of a system of ancestral cult. They can also be perceived as territorial markers delineating the areas controlled by different farming communities and perceived as landmarks of previous habitation enduring for millennia after their construction.

The long barrows in Bohemia are dating between 4000/3800-3300 BC. Unlike the burials in contemporary megalithic and non-megalithic monuments in Western Europe the long barrows in Bohemia usually contain single burials, particularly emphasizing the familial local ties and more private and intimate relationships towards ancestors.

The results of complex investigations of three Late Neolithic monuments in Central/North Bohemia (Dušníky, Vražkov and Račiněves) will be presented. We are going to discuss the variability of types of long barrows constructions in this region and follow the secondary use of the monuments in later prehistoric periods.

4 MEGALITHIC TOMBS AND BIOARCHAEOLOGICAL RESEARCH IN SWEDEN

Abstract author(s): Ahlstrom, Torbjorn (Department of Archaeology and Ancient History, Lund university)

Abstract format: Oral

Megalithic tombs in southern Sweden are associated with the Funnel-Beaker culture and categorized as dolmens and passage tombs. Megalithic tombs are distributed along the western coast, Scania, Öland and Gotland as well as a notable concentration of tombs in Falbygden, Västergötland. The following talk presents studies on the burial ritual practised. The presence of articulated human skeletal remains was noted already during 19th century but neglected in favour for an ossuary hypothesis as regards the function. Recent excavations have unearthed articulated human skeletal remains and shifted the function towards proper graves. Finds of animal bones also point to regional differences in burial customs. One tell-tale sign of bone materials from megalithic tombs in southern Sweden is the presence of boar phalanxes. Results from bioarchaeological analysis in general, such as paleopathology, will be presented. Here focus will be directed towards the caries rate and diet in general. One intriguing paradox is the recent biomolecular evidence of the plague bacteria, but this in the absence of a catastrophic mortality.

5 NUTRITIONAL STRESS, MARINE RESOURCE CONSUMPTION AND LATE WEANING: NEW INSIGHTS ON NEOLITHIC ORKNEY FROM ISOTOPE RESEARCH

Abstract author(s): Clark, Charlotte - Faillace, Katie - Nederbragt, Alexandra (Cardiff University) - Smyth, Jessica (University College Dublin) - Madgwick, Richard (Cardiff University)

Abstract format: Oral

The Neolithic of Orkney has been subject to a vast amount of research due to its exceptionally rich archaeological record. Previous studies have characterised diet and agriculture as overwhelmingly focussing on terrestrial, domesticated resources. This has been observed using bulk isotope data from bone collagen and zooarchaeological remains. However, this provides only a long term dietary average and improved temporal resolution has the potential to provide a more nuanced narrative. Incremental analysis of stable isotopes of carbon ($\delta^{13}\text{C}$) and nitrogen ($\delta^{15}\text{N}$) from tooth dentine provides detailed life histories into the childhood and adolescent diet, which would be otherwise obscured in bulk isotope data. This analysis was conducted on fourteen second and first molars for Neolithic passage tombs Isbister and Banks, located on the island of South Ronaldsay, Orkney. Changes in childhood and adolescent diet were observed, including periods of nutritional stress for ten individuals, six of whom were nutritionally stressed between 13 and 16 years old. Evidence for the occasional consumption of marine foods was also found in some individuals. The late cessation of breastfeeding ending at up to four or five years of age was also discovered in two individuals. This evidence suggests that a diet based on farmed foods was difficult to maintain, due to the harsh weather conditions that the Orkney islands experience and provides new detail on the lifeways and foodways on Neolithic Orkney.

6 LIFESTYLE AND SUBSISTENCE AMONGST THE PASSAGE TOMB BUILDERS DEFINED THROUGH ORGANIC RESIDUE ANALYSIS AND COMPOUND-SPECIFIC RADIOCARBON DATING OF POTTERY

Abstract author(s): Olet, Lilly - Casanova, Emmanuelle (Organic Geochemistry Unit, University of Bristol) - Knowles, Timothy - Monaghan, Paul (Bristol Radiocarbon Accelerator Mass Spectrometry Facility, University of Bristol) - Evershed, Richard (Organic Geochemistry Unit, University of Bristol) - Smyth, Jessica (School of Archaeology, University College Dublin)

Abstract format: Oral

As part of the Passage Tomb People project, ca. 500 vessels from three Irish Sea regions of passage tomb construction in the Middle Neolithic – North Wales, Ireland and Orkney – have been investigated for their lipid residues. The sampled pottery includes several styles (Early Neolithic Carinated Bowls, Middle Neolithic Unstan and Impressed Ware, Late Neolithic Grooved Ware) that encompass the time of development of increasingly monumental megalithic architecture, and include the peak and secondary use of the monuments. This approach enabled us to study trends in pottery use regionally and diachronically. Compound-specific radiocarbon dating of lipids entrapped in the potsherds links the pottery assemblages to a specific period of time and is proving valuable to assess how fast artefacts and innovations spread and were exchanged between communities in the study regions. Using both organic residue analysis and radiocarbon dating, we were able to assess whether trends in the use of pottery correspond with changes of lifestyle and subsistence practices of past societies. We considered whether there were localised responses to environmental differences in each of the study regions or whether such changes were a reflection of tight-knit networks of people who shared common ideas regarding form as well as function.

7 MOBILITY AMONG MONUMENT BUILDERS: AN ISOTOPIC INVESTIGATION OF NEOLITHIC COMMUNITIES FROM ORKNEY AND IRELAND

Abstract author(s): Faillace, Katie - Madgwick, Richard - Andersen, Morten - Nederbragt, Sandra (Cardiff University) - Smyth, Jessica (University College Dublin)

Abstract format: Oral

Passage tombs of the Late Neolithic have been subject to extensive research, but the scale of community networks among their builders is enigmatic. This paper investigates mobility, geographic origins, and environmental exploitation strategies of Neolithic communities from the Irish Sea area. Despite similarities in the structure and iconography of Neolithic monumental tombs in this region, the nature of the connections and contact between communities and with the British Isle remains opaque. Enamel from 130 humans and animals from Neolithic Orkney and Ireland was analysed for early life origins using strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) isotope analysis. Early life signatures from human enamel ($n=56$) were also supplemented by oxygen ($\delta^{18}\text{O}$) isotope analysis. While equifinality remains a challenge in isotopic investigations, results demonstrate regional patterns among population movement (or lack thereof). Strontium values from sites within the Orkney Islands suggest inter-island movement between communities, but limited mobility with Hebridean or Scottish mainland communities. A small number of outliers from both eastern Ireland and Orkney exhibit enriched $\delta^{18}\text{O}$ values, and likely represent movement from more westerly or southerly locations (e.g. western Ireland, Wales). As part of the wider 'Passage Tomb People' project, this study uses isotope analysis to show that,

although movement between communities occurred, inter-community mobility was likely restricted to the Irish Sea/ North Atlantic façade region. These findings transform our understanding of Late Neolithic networks and scales of connectivity.

8 MULTI-PROXY APPROACH OF CATTLE SECONDARY PRODUCTS EXPLOITATION IN NEOLITHIC IRELAND: INTRA-TOOTH SEQUENTIAL ISOTOPIC ANALYSIS (C, O, SR) AND ZOOARCHAEOLOGY

Abstract author(s): Pigiere, Fabienne (University College Dublin, School of Archaeology; Department of Geography, Royal Holloway University of London) - Balasse, Marie (UMR 7209 Archéozoologie, archéobotanique: sociétés, pratiques, environnements, CNRS/MNHN) - Snoeck, Christophe (Analytical, Environmental & Geo-Chemistry, Dept. of Chemistry, Vrije Universiteit Brussel, AMGC-WE-VUB; G-Time Laboratory, Université Libre de Bruxelles, ULB; Maritime Cultures Research Institute, Dept. of Art Sciences & Archaeology, Vrije Universiteit Brussel, MARI-LW-VUB) - James, Hannah (Analytical, Environmental & Geo-Chemistry, Dept. of Chemistry, Vrije Universiteit Brussel, AMGC-WE-VUB; Maritime Cultures Research Institute, Dept. of Art Sciences & Archaeology, Vrije Universiteit Brussel, MARI-LW-VUB) - Fiorillo, Denis (UMR 7209 Archéozoologie, archéobotanique: sociétés, pratiques, environnements, CNRS/MNHN) - Smyth, Jessica (University College Dublin, School of Archaeology)

Abstract format: Oral

The Kilshane enclosure site (Co. Dublin) has provided the largest surviving Neolithic cattle assemblage in Ireland, offering an exceptional window into animal exploitation in the mid-4th millennium BC. A multi-proxy analysis has been designed to investigate animal management practices and which secondary animal products were exploited. This research presents the results of sequential carbon, oxygen, and strontium isotope analyses of enamel to investigate diet, seasonal herding, birth seasonality, and animal mobility along with an osteological approach of age-at-death, sex, morphology, and pathologies. The data of strontium isotope analysis are used for investigating the geographical range where cattle were raised and moved during their lifetime. The sequential carbon and oxygen isotope analysis of enamel provide evidence of seasonal variation in diet and seasonal calving. This combined multi-proxy study allows to approach animal management within a better defined geographical and seasonal context. The implications of these husbandry practices are discussed in relation to the exploitation of specific secondary animal products, namely milk and animal power.

9 INVESTIGATING MIDDLE NEOLITHIC HERDING PRACTICES: SEX DETERMINATION OF CATTLE REMAINS USING PROTEOMICS

Abstract author(s): Buckley, Michael - Pal Chowdhury, Manasij (University of Manchester) - Pigiere, Fabienne - Smyth, Jessica (University College Dublin)

Abstract format: Oral

Although proteomic techniques have been increasingly used to improve our understanding of the human past, few have focussed on the study of tooth enamel for sexing in archaeofaunal remains despite initial studies over a decade ago looking at human teeth. Here we explore the use of LC-orbitrap-MS/MS for identifying the sex of archaeological domesticated cattle remains from the Neolithic enclosure at Kilshane, Ireland (c. 3600 cal. BC), in addition to modern reference materials. Although several individuals could be confidently identified as male, and some less confidently as female, there were also some inconsistencies with predictions based on morphology, albeit largely on size. Through comparison with osteometric analyses, the ~85% of the proteomic analysis estimates were consistent with identifications on morphological interpretation. Nonetheless, the male/female proportions were relatively consistent between the proteomic approach and morphological approach based on metacarpals previously reported, both providing ~53% of females and 47% of males. Unexpectedly, our results evidence clear differences between modern reference materials and the archaeological materials, likely reflecting preservation biases.

10 MEGALITHIC LANDSCAPES IN CONTEXT: THE ROLE OF LITHOLOGY IN FUNERARY ARCHITECTURES

Abstract author(s): Navajo-Samaniego, Esther - Jiménez-Gisbert, Guillermo (University of Alcalá) - Vázquez-Martínez, Alia (University of Alcalá; University of Santiago de Compostela, CISPAC)

Abstract format: Oral

This communication has a PhD research project as starting point. Its main objective is the study of tomb builders' occupation dynamics in the middle Guadiana River basin between the 5th and 3rd millennium BC, contrasting with other Atlantic areas.

Traditionally, landscape has not been considered in megaliths studies in Southwest Iberia. Archaeological research has mainly been focused on architectural typologies and material culture analysis. Nowadays, the application of new non-invasive techniques, such as LiDAR data and photointerpretation, has allow a significant change. Data obtained

show a richer and more varied archaeological record than expected where landscape plays an important role in these dynamics. Analysis of lithology in relation to megaliths positioning in landscape will allow us to understand how Neolithic societies of Southwest Iberia took advantage of local and foreign resources, both for these architectures' construction and for a long-lasting settlement in landscape. They had a thorough knowledge of the surroundings as well as a "cultural" way of relating to the elements that make it up. For this purpose, we have a detailed inventory of the megalithic structures located in the study area, in addition to lithological information that will be analysed in GIS.

The analysis of megalithic tombs in landscape will allow us to make a first approach to the occupation dynamics of the middle Guadiana River basin in the chronology indicated. Besides, it will allow us the use of geological references that identify the relationship between human groups and nature through the selection of large stones that make up their most emblematic architectures. The agency between nature and culture provides data for broader readings applicable to Atlantic Europe.

11 A NEOLITHIC GEOLOGY? STONES WITH INCLUSIONS IN PASSAGE TOMB ARCHITECTURE

Abstract author(s): Kenny, Patricia (University College Dublin)

Abstract format: Oral

The passage tombs of Atlantic Europe are a lasting memorial to an incredibly accomplished society, with a broad knowledge system encompassing aspects of engineering, astronomy, and stone-working. The stones used to build these monuments have been explored from a range of perspectives. It seems likely that stones were chosen based on criteria such as colour, source, and texture, and some may have had symbolic meaning. This paper investigates the presence of stones with geological inclusions at these sites and asks what these stones can tell us about Neolithic people and their society.

Stones with geological inclusions (SWI) are defined as structural stones with fossils, mineral veins, rock clasts, or other distinct objects embedded in the stone matrix. Anthropological research demonstrates that unusual stones, such as these, often feature in superstitions and folklore and are sometimes attached to origin myths and broader belief systems. This research considered whether the presence of SWI in Neolithic monuments indicates comparable beliefs in Neolithic communities.

This research draws upon fieldwork in Ireland, Britain, and Brittany (France). SWI are present across all regions, and their distribution is often patterned within tombs, suggesting they were deliberately chosen. SWI reference outcrops, mountains, and other geological features at multiple sites. This relationship indicates an intimate knowledge of local geology, in which inclusions played an important role. This paper argues that Neolithic people cultivated a detailed knowledge system of stones, their properties, and geological inclusions in particular. This knowledge system played an important role in their society and is reflected in their artefacts and architecture.

12 THE COTSWOLD SEVERN LONG BARROWS AND THEIR CONNECTION TO THE SUN, MOON AND STARS

Abstract author(s): Armstrong, Pamela (Bournemouth University)

Abstract format: Oral

The Cotswold Severn long barrows are the giants of their time. Built over five thousand years ago, these monumental mortuary houses brought a radical new architecture to southwestern Britain. This research explores the belief systems of the communities who created these sentinels to a lost time. The question at the heart of this project asks whether the Cotswold Severns had a celestial cosmology, one that linked to the sun, moon or stars, embedded in their design. The research process involved choosing barrows that are not only extant but which have either original stonework or a substantial mound still standing. Sixteen such structures were identified. Fieldwork included an assessment of each barrow's orientation towards its local horizon. This involved surveying the axis of each monument and, where they existed, the chambers and horned forecourts as well. Deskwork then involved the application of software to replicate Neolithic skies. The resulting findings indicate that these houses for the dead did connect to the sky. Traditional skyscape archaeology argues that solar and lunar alignments were integral to Neolithic design but this research indicates that where the people of the long barrows are concerned, the stars were given preference.

NO MOVEMENT, NO TRADING, SIMPLY LOCAL: CREATING NARRATIVES AROUND LOCAL RESOURCES IN PREHISTORY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Prieto, Alejandro (Research Group on Prehistory, GIZAPRE. Department of Geography, Prehistory and Archaeology. University of the Basque Country) - de Lombera-Hermida, Arturo (Centro de Investigación Interuniversitario das Paisaxes Atlánticas Culturais - CISPAC) / Universidad de Santiago) - Gehres, Benjamin (CNRS - University of Rennes 1) - Serna, Alejandro (BioArCh - Department of Archaeology - University of York)

Session format: Regular session

Raw materials and resources studies have become a basic source of information to understand Prehistoric humans' mobility and inter-group interactions. In Prehistoric Archaeology, just as nowadays and in historical times, the furthest raw material -representing the longest mobility, interchange or trade route- is often an argument to highlight archaeological sites, regions or periods as the most interesting, the most behaviourally complex, the most advanced or the most meaningful. However, archaeological and ethnographic data show that non-local artefacts are only a small portion of Prehistoric materiality, which is mainly made of quotidian actions using local resources. Therefore, why does the archaeological practice, regardless of the context, tend to stress allochthonous resources? And what are we considering local and what are we considering allochthonous? What are the narratives created after the classification of artefacts or resources as local?

The session "no movement, no trading, simply local: creating narratives about local resources in Prehistory" will discuss these questions from the perspectives given by the various disciplines that can tackle the autochthonous character of the raw materials. Case studies from all around the world working on stone and pottery artefact sourcing, anthracology, faunal studies or isotopic analyses, among other disciplines, are welcome to the session. Multiproxy and theoretical contributions about diverse and complex narratives on the management of local resources in Prehistory are also encouraged.

ABSTRACTS

1 ACQUISITION OF IGNEOUS RAW MATERIALS IN THE UROLA VALLEY: SOURCES OF SUPPLY AROUND THE IRIKAITZ DEPOSIT

Abstract author(s): Dominguez-Ballesteros, Eder (Universidad del País Vasco)

Abstract format: Oral

The Irikaitz archaeological site is located in the north of the Iberian Peninsula, in the Basque Country region. It is an open-air site on the banks of the middle course of the Urola River. Within the framework of the analysis of the capture of resources close to the deposit, we have studied igneous raw materials in the archaeological remains of the Lower and Middle Paleolithic of Irikaitz. Through the study, several tools have been found made of various types of basalt, dacites, and tuffaceous shales, among others. In order to understand how the prehistoric groups that inhabited Irikaitz collected this type of raw materials, we have carried out a geological analysis of the primary and secondary outcrops in the area, detecting several possible sources of supply. The Urola River cuts several geological strata with igneous lithologies that over time have been eroding and accumulating in the form of pebbles, in secondary deposits a few kilometers from the archaeological site. Through Geographic Information Systems (GIS), and based on concepts such as 'accessibility', we have analyzed the environment and the possible routes between the deposit and the sources of supply. These results provide very valuable information on the use of local raw materials, allowing us to understand the management of the territory and its immediate environment, carried out by these Paleolithic groups.

2 ACHEULEAN QUARTZITE PROCUREMENT STRATEGIES AT EL SOTILLO - CIUDAD REAL (SPAIN)

Abstract author(s): Abrunhosa, Ana (IPHES - CERCA - Institut Català de Paleoeologia Humana i Evolució Social; ICArEHB - Interdisciplinary Center for Archaeology and Evolution of Human Behaviour, FCHS - Universidade do Algarve) - Pérez-González, Alfredo (IDEA - Instituto de Evolución en África) - Santonja, Manuel (CENIEH - Centro Nacional de Investigación sobre la Evolución Humana; IDEA - Instituto de Evolución en África) - Méndez-Quintas, Eduardo (GEAAT - Grupo de Estudos de Arqueoloxía, Antigüidade e Territorio, University of Vigo; IDEA - Instituto de Evolución en África) - Panera, Joaquín (Departamento de Prehistoria, Historia Antigua y Arqueología, Universidad Complutense de Madrid; IDEA - Instituto de Evolución en África) - Rubio-Jara, Susana (Departamento de Prehistoria, Historia Antigua y Arqueología, Universidad Complutense de Madrid; CENIEH - Centro Nacional de Investigación sobre la Evolución Humana; IDEA - Instituto de Evolución en África)

Abstract format: Oral

El Sotillo (Malagón, Ciudad Real) is an open-air site in the upper Guadiana basin. It locates in the central-southwestern area of the Iberian Peninsula within the Palaeozoic synclorium of El Robledo-Porzuna-Malagón, a large Variscan structure forming an extended depression in the NW-SE direction.

Sotillo was excavated between 2017-2019 and is the first dated Early and Middle Palaeolithic stratigraphic sequence in a region known for the abundant Palaeolithic superficial findings. Here we present the lithic raw material results from levels 4 and 5, studied under the project CEN154P20, co-financed by the ERDF (European Regional Development Fund) and Junta de Castilla y León. Level 4 contains Acheulean industry (currently under study). The level 5 Acheulean industry was recently published and is the highest concentration of industry recorded in the Iberian Peninsula in fluvial gravel bars, dated by OSL of 303 ± 25 ka and 258 ± 17 ka.

Quartzite represents 99,9% of the exploited raw materials. It is also the most abundant material in the region and seems to be a form of expedient exploitation without many degrees of predetermination or source selection. However, not all quartzites are the same. It is possible to distinguish different grain sizes, degrees of metamorphization, and levels of alteration affected by post-depositional processes and influenced by the spacing between quartz grains and other physical characteristics of the material. Altogether, these aspects influence how the material behaves during knapping and use.

We analyzed the variability of quartzite present in the landscape surrounding El Sotillo and compared it with the proportions present in the archaeological assemblage. In this way, we try to see if it is possible to determine some form of selection and transport of local material. We look to discuss the importance of analyzing local raw materials to understand human interaction with local resources.

3 LOOKING FROM THE OTHER SIDE: WHAT QUARTZITES CAN TELL US ABOUT LOCAL ECONOMIES IN PALAEOLITHIC HUNTER-GATHERER SOCIETIES

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Abstract format: Oral

The mobility of objects and the people behind them constitutes the most outstanding topic addressed by lithic sourcing in Palaeolithic Archaeology. The historiography generally highlights the discovery of the longest contact in a determined period or region, but also a broad historical construct consisting of a continuum evolutionary trend towards the increase of mobility and/or trading routes in human history. This historiographic trend has promoted sourcing research in specific raw materials that have already tested their relevance as long-distance tracers: flints and obsidian. This is especially true if they are rare or even flashy. Notwithstanding, the majority of the raw materials left in a determined archaeological site were not the consequence of long-distance mobility routes, trading or even commercial routes, but the consequence of daily-life actions. Which were these actions? What did they tell us about human behaviour?

In the last ten years of research, we have been analysing quartzite from geoarchaeological perspectives in different chronological scenarios (from Middle to Upper Palaeolithic) and geographies (Cantabrian Region and Central Europe). Contrary to what was expected, a minor portion of quartzites in these sites are unveiling that some were procured from exogenous sources, but more interestingly, we are spotlighting daily-life actions derived from the exploitation of local resources. In this presentation, we will show up different quotidian actions involving quartzites as local resources. They show us a variety of procurement behaviours that range from the quarrying of determined types and varieties in specific outcrops to the selection of raw material in secondary contexts, but also a wide panoply of resource management strategies played by Palaeolithic populations. These behaviours are heterogeneous as we humans are and they unveil that the aforementioned historical continuum is full of deviations and ruptures.

4 FUEL AND ROCKS FROM ABRIC ROMANÍ. A COMPARATIVE ANALYSES OF LOCAL RAW MATERIAL ACQUISITION PATTERNS AMONG NEANDERTHALS

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Abstract format: Oral

Fuel and rock acquisition patterns among neandertals are not usually studied together as scientific paths of each discipline often draw separate lines. Fuel procurement practices are influenced by factors such as availability, quality and quantity requirements, environmental conditions, and settlement patterns. Lithic raw materials, considered as the only physical evidence of territorial mobility, are a key element to delimit the exploitation of a territory. Rocks are analyzed for petrography and source areas, aiming to map mobility patterns of acquisition.

The aim of this research is to evaluate firewood and lithic raw materials to identify patterns of acquisition in short- and long-term occupations at Abric Romaní. It is a well-known neandertal site with a 16-layer stratigraphy, dated from ca. 40-110 ka BP. Firewood evidenced based on charcoal analyses has provided data showing recurrent exploitation of *Pinus sylvestris* type (scots pine type). In some layers, presence of other taxa such as *Juniperus* sp., *Prunus* sp., *Rhamnus cathartica/saxatilis* and *Salix* sp. are few represented. Lithic raw materials are dominated by chert (ca. 80% for most layers), sourced from primary outcrops located 16 km to the west. Limestone, quartz, and schists are considered purely local. However, these materials do not represent more than a 20% of the record and are less than 6-10% in most layers.

The general trend is that chert comes from nearby sources, where it is abundant and easy to collect. Fuel, a daily requirement, was collected from the closest area to meet quantity and quality requirements for hearths. The use of local sources suggests a foraging radius of the neandertal communities between 6 to 20 Km. The comparison of both acquisition practices considering distances, requirement, and weight, allows to discuss aspects related to mobility and proximity of the resources to the place of use.

5 LOCAL, BUT NOT SIMPLE. LITHIC RAW MATERIALS IN THE MIDDLE AND UPPER PALEOLITHIC SEQUENCE OF COVA EIRÓS (GALICIA, SPAIN)

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Abstract format: Oral

Cova Eirós is a cave site located in NW Iberia (Galicia, Spain), a region dominated by Paleozoic formations and almost void of flint outcrops. The stratigraphical sequence contains archaeological levels ranging from the Late Middle Paleolithic (Levels 3 and 4) to the Final Magdalenian/Azilian (Level B). The lithic raw materials available in the territory nearby the site are anhedral and euhedral quartz, quartzite, and scant cherts outcrops.

Despite the lithological constraints, the prehistoric groups managed to fulfill the techno-typological standards of the Middle and Upper Paleolithic technocomplexes. Local raw materials are used for the consecution of the most complex and technically demanding lithic production methods (Levallois and laminar reduction). Changes in raw material acquisition, spatial fragmentation of the reduction sequences, and new technical choices and adaptations (technological transfer) are other strategies applied by the Paleolithic groups to help overcome the local raw material constraints. The lithic assemblages analyzed along the Cova Eirós sequence are fully consistent with the technological templates defined in other regions where flint is dominant. The arrival of Cantabrian Upper Paleolithic groups, used to flintknapping and laminar technology, to a new lithological region implied a reorganization of their technological basis. These features of the lithic assemblages show the technical and technological flexibility and variability of the Paleolithic groups and their capacity for adaptation to environmental conditions.

6 A GEOLOGICAL PERSPECTIVE IN LOCAL OCHRE RESOURCES AND PROCUREMENT STRATEGIES DURING PREHISTORY IN NE ITALY

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Abstract format: Oral

Provenance studies carried out on yellow and red ochre fragments from two Upper Palaeolithic sites in North-Eastern Italy (Fumane cave and Tagliente rockshelter) demonstrated that the raw materials were collected from two

principal geological sources in a distance 8-20 km as a crow flies (Cavallo, 2016). Raw materials were transported to, and processed at the sites. They were fragmented, heated for the conversion into artificial hematite, powdered and used. It is relevant to point out that the procurement strategies varied markedly at Tagliente rockshelter where a major number of samples were analysed. In particular, it was observed that more resistant raw materials (quartz-rich) were selected during the first stages of occupation of the site whilst later carbonate rich ochre were collected (Cavallo et al., 2017). The explanation concerning this change might have been motivated by the necessity to use a weaker material easier to collect and process.

Other potential geological sources were not accessed for several reasons. Eocene carbonate-rich ochre found in palaeokarst caves were difficult to reach and exploit. Ochres associated with Eocene volcanic terrains are clay-based materials and (actually) relatively easily accessible, so it is not clear why these natural resources were not used.

In conclusions, it seems that Prehistoric humans used local available raw materials and selected them according to their specific applications.

- Cavallo G., 2016. Characterisation, sourcing, and processing of Upper Palaeolithic ochre in the Lessini Mountains (NE Italy). PhD dissertation, University of Pavia (Italy).
- Cavallo G., Fontana F., Gonzato F., Peresani M., Riccardi M. P., Zorzin R. 2017. Textural, microstructural, and compositional characteristics of Fe-based geomaterials and Upper Palaeolithic ochre in the Lessini Mountains, Northeast Italy: Implications for provenance studies. *Geoarchaeology*, 32, 437-455.

7 BEHIND THE LAUREL LEAVES: LOCAL UPPER SOLUTREAN PRODUCTIONS. SOME INSIGHTS FROM THE NON-FLINT LITHIC COMPONENT OF CUZOUL DE VERS (FRANCE)

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Abstract format: Oral

What best represents Upper Solutrean technology are its characteristic, over-designed lithic tools, such as laurel leaf points and shouldered points. These implements, most of which were dedicated to hunting activities, depend on “high quality” raw materials (i.e., highly suitable for knapping). Thus, such resources often demonstrate long-distance circulation and spatio-temporal fragmentation of production. Other tools relying on same or similar raw materials and circulation routes are rare (e.g., endscrapers).

The emphasis on these economically invested implements has led to a more limited appreciation of the exploitation of other, low-circulation resources in the constitution of Upper Solutrean lithic toolkit. This is particularly true with regard to “low quality” raw materials (i.e., less suitable for knapping) such as most non-flint rocks (e.g., quartz, basalt, granite). However, these resources play a significant role in daily activities and related toolkits, some of which remain understudied.

We illustrate this question with the archaeological case of le Cuzoul de Vers (Lot, France). The re-evaluation of the non-flint lithic component from Upper Solutrean levels (29-31), using a set of complementary analyses such as macroscopic petrography and technological analysis, provides interesting insights regarding the activities carried out at the site as well as the duration and logistics of the occupations. These results complement the data provided by previous analysis of other archaeological components, notably flint productions and faunal remains, allowing a more complete understanding of the Solutrean occupations of the site. These inferences enhances the current vision of human behaviour during the Upper Solutrean in the northern part of the Aquitaine Basin, organized around a regional and probably seasonal mobility that appears more complex than previously thought.

8 QUARTZ DIVERSITY: IS LONG DISTANCE PROVENANCE A GOOD QUESTION TO ADDRESS?

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Abstract format: Oral

Quartz is a material commonly used to produce lithic tools during prehistory. Despite this, the study of this material is only slightly invested in comparison with what exists for other rocks. Quartz is a mineral with high variability, both in its geological aspect and in its physical properties (macroscopic aspect, mechanical properties when knapped). The

particularity of this diversity, which is crucial for archaeology, is that it occurs in very small geographical areas. This observation leads us to imagine new patterns of selection and circulation of this raw material. Are the current questions about other lithic materials such as flint or obsidian relevant to the characteristics of quartz? The example of quartz from the Chassezac valley (Ardèche, Lozère and Gard, France) will be used to discuss the characterisation of this rock, from fieldwork to laboratory. A field study carried out by an interdisciplinary team, made it possible to constitute a sampling that was reasoned and representative of the variability. On this basis, knapping experiments were carried out to test the correlation between the type of quartz (generation, geology) and mechanical knapping properties. Macroscopic and thin section observations have enabled their characterisation to be specified. The characterisation of the rock will finally open a discussion on the selection and exploitation for tool making of this raw material by pre-historic human groups. Although often considered as a poor-quality material, the exploitation by archaeology of the constraints and characteristics of this rock can nevertheless allow us to understand their knowledge and management of the geological environment.

9 HUMAN MOBILITY IN THE WESTERN PYRENEES: RAW MATERIAL PROCUREMENT IN NEOLITHIC POTTERY MANUFACTURING

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Abstract format: Oral

The mobility of human groups in Prehistory, among other reasons, is closely motivated by the procurement of raw materials to elaborate different artefacts. In this sense, mountainous environments are interesting scenarios to explore the local response and dynamics of raw material procurement and the mobility associated with it. The expansion of the Neolithic in Iberia has been linked to the introduction and consolidation of some technological innovations with a complex process of manufacture like pottery. However, its introduction, manufacturing and use in these environments is far from being well-understood.

In this presentation, we explore the mobility of human groups linked to the introduction of ceramics technology in the Western Pyrenees, focused on the main pottery assemblages recorded in the temporary settlements of this region (Berroberria, Abautz, Aizpea and Zatoya). Pottery, as an ecological and social product, not only keeps a geological history, but also reveals human-environment interactions through the use of different raw materials. Therefore, we explore how raw materials sources are available in the local landscape of western Pyrenees and differentiate local and allochthonous origin of raw materials in temporary settlements. Mineralogical (thin section) and chemical analyses (LA-ICP-MS) offer an integrative and systematic approach to these assemblages, allowing the comparison with geological samples gathered from the surroundings sites.

Being temporary settlements, the pottery is not necessarily manufactured at these sites, and it may come from other settlements where manufacture is taking place. Our research shows a high variability in the procurement of raw materials and technological choices, such as election of temper. In conclusion, our results suggest a high mobility of these human groups interacting with the surrounding landscape.

10 NOTHING ELSE “THAN LOCAL” MATTER? THE CASE OF LBK CERAMICS FROM ALSACE (FRANCE)

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Abstract format: Oral

Productions made from local materials are often considered to provide little information about the societies in which they are made, or about the craftsmen. However, they can provide a great amount of data on the choices made by potters in the selection of clay, their acquisition strategies: opportunistic or targeted, or on the technical traditions of the clay modification “chaîne opératoire” of the groups studied.

In this paper, we will discuss the contribution of ceramic material analysis and the identification of local raw materials to the understanding of the LBK stylistic groups of Alsace (Eastern France), where the arrival of the LBK culture is dated to around 5355/5240 B.C. Although this culture is known to be very homogeneous and characterised by a strong similarity in domestic architecture, funerary practices, but also in the decorations and forms of pottery, local stylistic variations can be observed, particularly in Alsace, where two stylistic groups have been identified. They are located in Lower and Upper Alsace, separated by a mixed stylistic area located in the region of the city of Colmar. This distinction is particularly observable in their ceramics and decorations, and no stylistic exchange seems to have taken place for more than 500 years. What can be said about the raw materials of the ceramics of these groups? Does the local or non-local character of the production contribute to their characteristics? Have they the same acquisition

strategies? Will they exploit distant materials or adapt to local clays? Will they respond in the same way to geologically similar materials?

These questions are being addressed in the collective research programme “Territorial stylistic division during the LBK in Alsace”, and this paper will present the first results of thin section analyses carried out on ceramic from occupations.

11 **PERSISTENT TECHNOLOGICAL TRADITIONS IN A CHANGING WORLD: LATE NEOLITHIC AND EARLY COPPER AGE CERAMIC PRODUCTION ON THE GREAT HUNGARIAN PLAIN**

Abstract author(s): Gyucha, Attila (Department of Anthropology, University of Georgia) - Riebe, Danielle (University of Georgia) - Kreiter, Attila (Hungarian National Museum)

Abstract format: Oral

In a collaborative effort, the Körös Regional Archaeological Project (KRAP) and the Prehistoric Interactions on the Plain Project (PIPP) in southeastern Hungary worked together to explore how ceramic technology can be used to infer socio-cultural variation and how technological analyses can contribute to the understanding of prehistoric sociopolitical changes. This research focused on the Late Neolithic (5,000-4,500 BCE) and the subsequent Early Copper Age (4,500-4,000 BCE). Previous studies have demonstrated that interactions at multiple scales resulted in a strongly enforced socio-cultural boundary between two major Late Neolithic cultural units (i.e., the Tisza and the Herpály) in the region. By the following Early Copper Age, dramatic socio-cultural changes unfolded, including the abandonment of all Neolithic tell sites on the Great Hungarian Plain, and the socio-cultural boundary dissolved as evidenced by the mass homogeneity in the cultural material representative of the Tiszapolgár cultural unit. While some continuity between the Late Neolithic and the Early Copper Age can be seen visually through specific stylistic techniques on ceramics, variation in ceramic technology is less understood. With our project, ceramic technology was examined through the petrographic analysis of ceramics from six Late Neolithic and Early Copper Age sites and seven assemblages located within a 10-km radius in the Körös Region on the Great Hungarian Plain. This project was uniquely positioned to explore ceramic technological variation, due to a high level of geographic, geological, and chronological control of the selected sites and assemblages. The petrographic analysis resulted in the identification of similar communities of practice between the Herpály and the Tisza and illustrated that ceramic manufacturing practices continued from the Late Neolithic into the Early Copper Age, signalling continuing traditions in a fundamentally changing socio-political context.

12 **ASSESSING A NON-INVASIVE ARCHAEPETROLOGICAL METHODOLOGY IN A LATE PREHISTORY MACROTOOLING WORKSHOP. THE CASE OF THE MINE OF FONT DE FORRADILLA**

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Abstract format: Oral

A remarkable number of sites described as workshops and dedicated to the manufacture of polished macrotool artifacts has recently been documented in NE Iberia. The works have been focused all along the middle course of the Segre River Basin in the pre-Pyrenees, an area that was largely frequented by past human populations since the Palaeolithic. During our fieldwork seasons, that took place between 2020 and 2022, we identified various sets with representative elements of the bezel/polished tool chaîne opératoire, from which we count preforms, knapping debris and partial polished and picketed tools, most of them associated with human activities during the Late Prehistory. In this communication we present the interdisciplinary study applied to one of these sets, which was recovered at the mine of Font de la Forradella (Alòs de Balaguer, La Noguera, Lleida, Spain). We have applied a non-invasive lithological analysis methodology with the aim of proposing an analytical approach that carefully take in into account the material integrity of the archaeological heritage. Thus, after the application of macroscopic description of the samples, we have performed portable X-ray fluorescence (pXRF) measurements to determine the elemental composition of the collected samples. Then, the archaeological set has been compared to a geological samples' collection to infer past acquisition strategies.

13 WETLANDS AS LOCAL PLANT FIBRE CACHES IN PREHISTORY

Abstract author(s): Loudon, Nysa (University of Glasgow)

Abstract format: Oral

The local ecology of the prehistoric wetlands informs the use, material properties, and aesthetics of what is used to make fabric, cords, and ropes in prehistoric Europe and Britain and Ireland. This paper will explore the first year of PhD research that looks to explore the ecological, material, and aesthetic properties of unusual fibres in prehistoric textiles. With special reference to Britain and Ireland and the Neolithic/Bronze Age pile-dwelling lake settlements in the circum-Alpine region, this paper will set out to discuss the uses of water-side plants such as rushes (*Juncus* sp.) and Cyperaceae, riparian woodland species such as willow (*Salix* sp.), and mosses such as golden hair moss (*Polytrichum commune*) in local craft regimes. Prehistoric communities located near or on wetland environments are making pieces that are inherently tied to their management and conceptualization of their local environment and land. This research aims to investigate often overlooked types of plant-human relationships beyond/in tandem with subsistence. Evidence for these more unusual fibre plants has been difficult to prove until recently. With dedicated research into fibre identification and textile archaeology and improvements in microscopic techniques, the narrative that is emerging is that locally gathered plants played a larger role in prehistoric local craft economies than previously thought. Wetland ecologies, often existing on the edges of 'civilisation,' held many of these fibre plants. Exploration of non-subsistence plant gathering weaves a more nuanced narrative of past peoples' relationship to and how they lived within these wetland landscapes, which have often been seen by modern Western societies as unproductive, foul, and marginal.

14 LOCAL RAW MATERIALS AND POTTERY IN NW IBERIA FROM THE NEOLITHIC TO THE IRON AGE

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Abstract format: Oral

Nowadays, mobility, trade, migrations and cultural interactions are the most popular explanations for technological change in prehistoric pottery. For this reason, a large number of archaeometric studies of archaeological pottery focus on how "foreign" pottery, such as international European types of prehistoric pottery (i.e. Bell Beaker or Corded Ware pottery), were spread out on different cultural areas.

However, we believe that the study of regional styles and local ways of pottery manufacture is equally necessary to understand the entire process of pottery making and how it can change, or not, over time. Therefore, we devised a large scale study of prehistoric pottery from a single region (Galicia, NW Spain). The set is composed by 568 pottery shards of 42 archaeological sites, encompassing from the Early Neolithic to the local Late Iron Age, as well as 103 samples of raw materials (i.e., clays) collected in the vicinity of the sites. X-ray diffraction was applied to determine the mineralogical composition of the samples. Principal components analysis and discriminant analysis were applied to the whole dataset to characterize the mineralogical groups in the pottery assemblage. We intended to determine whether the materials used were of local origin or not, and extract information on the possible reasons for their selection and how prehistoric potters processed the clay. Thus, we aim not only to reconstruct the technological changes/continuities in the selection and processing of raw materials, but also to explore how prehistoric communities interacted with their local landscape and local natural resources.

15 IS LOCAL "BORING?" THEORETICAL AND METHODOLOGICAL CHALLENGES IN ARGUING LOCAL CERAMIC PRODUCTION IN THE ARCHAEOLOGICAL RECORD

Abstract author(s): Golitko, Mark (University of Notre Dame) - Riebe, Danielle (University of Georgia) - Kreiter, Attila (Magyar Nemzeti Múzeum) - Duffy, Paul (Christian-Albrechts-Universität zu Kiel)

Abstract format: Oral

Local" production is both a theoretical construct and a practical definition in archaeological artifact sourcing studies. A long history of Marxist theory in economic archaeology has resulted in local production being seen as the default condition, with trade and exchange as an interesting process and activity that requires explanation. As a result, local production is often viewed as not requiring explanation, or as an uninteresting "null" conclusion. Journals may consequently be less interested in publishing articles that fail to identify trade. Conversely, it is worth asking whether analysts are too eager to identify chemical outliers as indicating longer distance trade, when they could just represent the margins of local composition. Nonetheless, numerous ethnographic accounts globally suggest that pottery trade is a regular occurrence, and that it is a rarity that every community on the landscape produced its own ceramics. Certain

economic, social, and geographic/environmental constraints may however make localized production more likely in some contexts than others. Here, we address these issues using a case study of ceramic compositional analysis at five Bronze Age sites on the Great Hungarian Plain by petrography and LA-ICP-MS. Results suggest that little if any pottery was compositionally “non-local.” However, given the geological homogeneity of the study region, the definition of what constitutes “local” is influenced by the geographic scope over which the provenience postulate applies. It is difficult therefore in this context to distinguish between a scenario in which the occupants of each site produced the ceramics that were used and deposited there, and one in which regular trade occurred across the eastern Pannonian Basin.

16 WHO IS WHO? RE-THINKING EARLY IRON AGE ETHNICITIES THROUGH LOCAL WHEEL-MADE CERAMIC MANUFACTURE IN MEDITERRANEAN IBERIA

Abstract author(s): Cutillas-Victoria, Benjamin (Institute of Nanoscience and Nanotechnology, NCSR Demokritos.; Grupo de Investigación en Arqueología, Universidad de Murcia; Centre of Excellence in Ancient Near Eastern Empires. University of Helsinki)

Abstract format: Oral

The irruption of wheel-made pottery among the Late Bronze Age communities of the Iberian peninsula began with the Phoenician colonisation. The new ceramics were the result of the application of significant technological advances, mainly the wheel and the double-chamber kilns, and were a clear departure from the traditional local hand-made vessels. This dichotomy has tended to be extended to the control of the new forming methods and kiln firing, thought to be the domain of colonial potters and only belatedly transmitted to autochthonous artisans. This situation shows the reduction of colonial encounters to a simple binary opposition between colonisers and colonised, and how multiple narratives are based on the pre-eminence of allochthonous materials.

However, the recent archaeometric analyses in several sites from the Iberian Southeast reveal the local production of wheel-made ceramics between the autochthonous, previously considered Western Phoenician pottery. Using chemical, mineralogical, and petrographic characterisation techniques allow us to discover that these local wheel-made ceramics began from early chronologies, even at the end of the 8th century BC in some inland settlements of the region. This contribution aims to analyze these potteries that we can now clearly identify as local and to discuss the importance of the new influences and the traditional patterns in the evolution of these communities. In a colonial context framework, identifying these local vessels is essential to understand local workshops, consumption patterns, and exchange networks, thus re-evaluating the weight of the Phoenician presence throughout the Early Iron Age societies and the narratives created around the identity development of each community.

17 THE PRODUCTION OF HAND-MADE CERAMICS IN THE VAR REGION : PETROGRAPHY OF THE RAW MATERIALS AND SCALES OF SOURCING

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Abstract format: Oral

Hand-made ceramics represent the major part of Gallic ceramic production until the end of the Iron Age. The rare production sites discovered in Provence, as well as the variability of the forms and technical aspects of this pottery, point to a domestic fabric of local character. A few specific productions have been identified and seem to come from a factory, but these are only a minority of the vases found. Suffering from a permanent confrontation with imported Mediterranean ceramics present in most of the sites of southern Gaul since the 6th century B.C., the hand-made ceramics have been little studied. A petrographic analysis of the raw materials used in their manufacture makes it possible to place this production at the center of the problematics linked to the Gallic populations. The heterogeneous and probably local aspect of this production makes it possible to reconsider the pottery traditions, the management of the territory as well as the insertion of these communities in a larger sociological and cultural framework. The domestic, local or regional characterization of these productions is thus redefined according to these criteria. In order to compare data at different spatial, chronological and cultural scales, two oppidums near the coast, a plain habitat, a Gallic pottery production site and the Massaliète foundation of Olbia-de-Provence were chosen as study sites. From these collections, 181 thin sections have been made and make it possible to propose an initial analysis of the raw materials used.

THE ROLE OF LOCAL RESOURCES IN EARLY POTTERY FROM PATAGONIA (ARGENTINA): NEW NARRATIVES FROM ORGANIC RESIDUE ANALYSIS

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Abstract format: Oral

There has been a growing interest in paleodietary studies in the South American Southern Cone, especially regarding the role of domesticated plants in hunter-gatherer societies. In southern Patagonia (Argentina) recent research has focused on maize production, especially as the region is traditionally perceived to be marginal to its cultivation. Much less attention has been paid to the significance of other plant and animal resources and their role in the dispersal and adoption of pottery technology. As a result, narratives about the past are sometimes biased towards exotic domesticated crops rather than local food items.

Here we explore resource processing by Patagonian hunter-gatherers through organic residue analysis of their pottery. This analysis was carried out on ca. 100 pottery samples from Late Holocene sites across Patagonia using gas chromatography-mass spectrometry (GC-MS) and compound-specific isotope analysis of individual lipids by GC-combustion-isotope ratio-MS (GC-c-IRMS) (C16:0, C18:0). Through well-established molecular and isotopic criteria, we discern the types of commodities -marine, freshwater, ruminant, non-ruminant and plant- that might have been processed using ceramic containers. The results are used to examine whether Late Holocene Patagonian hunter-gatherers developed ceramics for specific purposes, illustrative of specialized subsistence practices in the absence of an agrarian economy.

A. LOCAL OR IMPORTED: EDXRF SPECTROMETRY COMPARISON OF POTTERY AND LOCAL CLAY SAMPLES FROM VELIKA HUMSKA ČUKA (CENTRAL BALKANS)

Abstract author(s): Mladenovic, Ognjen - Bulatović, Aleksandar (Institute of Archaeology, Belgrade) - Gajić-Kvaščev, Maja (Vinča Institute of Nuclear Sciences) - Kapuran, Aleksandar - Filipović, Vojislav (Institute of Archaeology, Belgrade) - Ljuština, Marija (Faculty of Philosophy, University of Belgrade) - Milojević, Petar (Institute of Archaeology, Belgrade) - Milić, Bogdana (Spanish National Research Council, Barcelona)

Abstract format: Poster

The site of Velika Humska Čuka, represents one of the most important multilayered prehistoric settlements in the Balkans, with a continuous inhabitation for almost six millennia. The site is located on one of the main communications hubs of Southeastern Europe, with natural roads spreading towards the north, east, and south. The excavations at the site have been conducted for almost a century, continuously yielding new finds and features from between the Eneolithic and the Late Bronze Age.

Within THE FLOW project, the elemental composition of the 10 uncommon Early Eneolithic vessels for this region and 5 clay samples from the site surroundings was determined by portable EDXRF spectrometry. The technique was chosen since the pots were reconstructed, so the applied analytical method should be non-destructive and non-invasive. The pots analysis was performed in situ, since their large dimensions. The measuring spots were chosen so that existing and available cracks suitable for measurements were analyzed. A milli-beam spot EDXRF spectrometer (in-house developed at the Vinča Institute of Nuclear Sciences, Belgrade, Serbia) was used for the analysis. A 35 kV high voltage, 800 μ A, no filter, and a 120 s measuring time were experimental parameters and kept constant during measurements of pots and clay samples.

The net peak area parameter value for the major, minor, and trace elements was selected for qualitative analysis. The same parameters were subjected to several pattern recognition techniques (HCA, PCA, DA) to explore similarities and differences among pots and raw materials. The elemental composition of the pigments used for the decoration of pots was also done using the same analytical technique and experimental setup. The detected chemical elements: Si, K, Ca, Ti, Mn, Fe, Rb, Sr, Y, and Zr, indicated similar composition between vessels and clay samples, indicating the utilization of local raw clays for production.

BIOLOGICAL PROFILING OF CREMATED INDIVIDUALS: CURRENT METHODOLOGICAL APPROACHES AND LIMITATIONS

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Cortesão Silva, Filipa (Archaeology Institute of Mérida - Spanish National Research Council; Research Centre for Anthropology and Health, University of Coimbra) - Veselka, Barbara (Multidisciplinary Archaeology Research Institute, Department of Art Sciences and Archeology, Vrije Universiteit Brussel; Analytical, Environmental, Geo-chemistry, Department of Chemistry, Vrije Universiteit Brussel) - Loeffelmann, Tessi (Department of Archaeology, Durham University; Multidisciplinary Archaeology Research Institute, Department of Art Sciences and Archeology, Vrije Universiteit Brussel; Analytical, Environmental, Geo-chemistry, Department of Chemistry, Vrije Universiteit Brussel)

Session format: Regular session

In the bioarchaeological study of cremation burials, one of the main objectives is to obtain the biological profile of individuals. Nevertheless, the morphological and structural changes to the bone, resulting from the cremation process, and the often incomplete skeletal representation in the cremation deposit, makes it difficult or even impossible to collect the required data. Particularly in recent years, considerable efforts have been undertaken to develop and further improve specific methodologies for estimating age at death, biological sex, and paleopathologies in burnt individuals.

This session aims to promote the dissemination of the most recent (un)published work in this field, while also seeking to reflect on the possibilities and limitations these methods offer. Papers may concern morphological and/or metric macroscopic methods, as well as histology, computed tomography imaging, cementochronology, and other novel applications. Another welcome contribution is the refinement of the criteria currently used, especially for biological sex attribution, to standardize procedures and increase comparability between various communities.

Since the age at death, sex, and pathologies of the deceased could have influenced their funerary treatment, obtaining a reliable osteobiographical profile is crucial. The reconstruction of both individual and group profiles boosts the understanding of factors influencing the funerary rite of past populations that adopted cremation as their main burial ritual.

ABSTRACTS

1 CREMATIONS AND THE ARCHAEOLOGY OF DEATH: A HOLISTIC APPROACH TO THE OSTEOLOGICAL ANALYSIS OF BURNED HUMAN REMAINS

Abstract author(s): Cerezo-Román, Jessica (University of Oklahoma)

Abstract format: Oral

This paper will discuss a holistic approach to conducting osteological analysis on cremated human remains. Cremation is a multi-stage process involving the body's preparation, burning the body in a pyre, and often removing remains into a secondary burial or secondary cremation deposit. The treatment of the body before, during, and after the fire, as well as the formation processes of the deposit, heavily affect the preservation and scope of the osteological analysis of human remains. Therefore, it is proposed that the osteological analysis start in the archaeological excavation and archaeological context needs to be an integral part of the bioarchaeological analysis of cremated individuals. To illustrate the benefit of this approach, two case studies from different time periods and contexts will be discussed. This will be done by detailed analysis of the archaeological context and posthumous treatment of the body combined with rigorous analysis of the thermal alteration, body preservation, estimation of age-at-death, biological sex, and determining pathologies. This approach facilitates the reconstruction of different stages, variations, and social significance of cremation rituals to the decedent, mourners, and community through time and space, as well as the identity and some aspects of the life course of these cremated individuals.

2 BIOLOGICAL PROFILES OF CREMATED INDIVIDUALS FROM PREHISTORIC GREECE

Abstract author(s): Chatzikonstantinou, Ioannis - Papathanasiou, Vasiliki (Department of History and Archaeology, Aristotle University of Thessaloniki) - Papakonstantinou, Niki (Department of History and Archaeology, Aristotle University of Thessaloniki; Fitch Laboratory, British School at Athens) - Kiorpe, Sotiria - Triantaphyllou, Sevasti (Department of History and Archaeology, Aristotle University of Thessaloniki)

Abstract format: Oral

The study of macroscopic heat-induced changes has advanced considerably in recent years based on the results of experimental, medical, and forensic studies applied to both humans and animals. The comprehension of the thermal alterations on the burnt bones reinforces the archaeological interpretation of the funerary practice of cremation,

allowing insights concerning the burning episode and the actions that precede and follow the combustion process. However, varying biological and cultural parameters, including taphonomic changes, funerary rites, burial context, post-depositional factors, method of excavation, and post-excavation treatment, can lead to progressive destruction of the bone assemblages, affecting the degree of fragmentation. Poor preservation and heat-induced changes deforming the initial size of the bones complicate the application of traditional osteoarchaeological methods for MNI, biological sex, and age estimation. In the last few years, there has been an effort to develop various techniques appropriate for burnt bones by recording the bone assemblages using the zonation system (for MNI calculation) and measuring dimorphic dimensions in cremated populations (for biological sex estimation). In this paper, we will present some preliminary results from the meticulous macroscopic examination of several cremated human bone assemblages from Greece, dating from the Neolithic (7th mill. BCE) to the Early Iron Age (11th-9th c. BCE) implemented in the framework of the research program of TEFRA funded by the Hellenic Foundation of Research and Innovation (H.F.R.I.). The emphasis will be given on the information related to the demographic synthesis and the biological attributes of the people whose bodies were subjected to burning.

3 **MAKING A DENT ON CREMAINS: COIMBRA'S CONTRIBUTION TO THE ANALYSIS OF BURNT HUMAN SKELETAL REMAINS**

Abstract author(s): Gonçalves, David (Direção-Geral do Património Cultural)

Abstract format: Oral

From the bioanthropological point of view, few tasks are as challenging as estimating the biological profile of an individual based solely on burnt skeletal remains. These are usually incomplete and fragmented. To turn things even more complicated, the bones and teeth that actually make it to the bioanthropologist's examination table may have been affected by heat-induced changes which alter their appearance and can therefore jeopardize any inferences. Benefiting from the compilation of experimentally burnt skeletons belonging to the 21st century identified skeletal collection at the University of Coimbra, efforts have been made to better understand how high temperatures affect the estimation of biological profiles. Both metric and morphological methods have been tested to better know their potential and limitations and thus assist experts on the decision process regarding the selection of the most adequate methodological procedures whenever analyses of burnt skeletal remains are required. A summary of the most important conclusions obtained so far from that undertaking is presented.

4 **ASSESSMENT OF THE CHANGES IN THE PARS PETROSA OSSIS TEMPORALIS UNDER THE INFLUENCE OF HIGH TEMPERATURE DURING THE CREMATION PROCESS**

Abstract author(s): Mackiewicz, Klementyna (Department of Archeology, University of West Bohemia in Pilsen)

Abstract format: Oral

Cremation is a very destructive ritual, behind which are deep beliefs in the purifying and releasing power of fire (e.g. in Slavic beliefs, or in Hinduism). However, some of the traditions and technical aspects are still poorly understood, and the nature of the cremains does not facilitate the interpretations.

The main aim of the study was to determine the degree of shrinkage of pars petrosa ossis temporalis under the influence of high temperature during the cremation process. Beside being the densest parts of the human skeletons, the petrous parts of temporal bones show high biomechanical strength even exposed to destructive processes. As a result, they preserve very well in cremation graves. Recognising the dynamics and degree of shrinkage of the different parts of the temporal bone may be useful for the development of new methods for the anthropological analyses, such as biological sex estimations.

In a modern crematorium in Prague (Czech Republic), an experiment was conducted by burning 15 human temporal bones and a pig's head (including soft tissues). Nine measurements were collected from each bone before the burning process. Measurements included the length and the width of the pars petrosa and the measurements of the internal acoustic meatus. Cremation was carried out under controlled conditions in a modern cremation oven. All the bones were burned together to maintain the same experimental conditions. The combustion process took about 40 minutes and the temperature reached 1000°C. Measurements of the individual bones were then repeated, and the significance of the dimensional changes was assessed.

Former studies have shown a size reduction of bone elements of 10-40% depending on bone type. However, those studies were carried out on bones composed of spongy bone. Changes to the dense petrous parts are expected to be smaller.

5 META-SEXING: CURRENT PRACTICES OF SEX-ESTIMATION OF CREMATION DEPOSITS IN ARCHAEOLOGY

Abstract author(s): Hlad, Marta (Vrije Universiteit Brussel; Université Libre de Bruxelles) - Loeffelmann, Tessi (Vrije Universiteit Brussel) - Vercauteren, Martine (Université Libre de Bruxelles) - Veselka, Barbara - Snoeck, Christophe (Vrije Universiteit Brussel)

Abstract format: Oral

Whether performed upon cremated or unburnt human remains, sex estimation is considered a key element of biological profiles within physical anthropology. Osteological data provides us with a basis for further research on palaeodemography, past socio-cultural practices, and palaeopathology. Despite the fundamental nature of sex within archaeological datasets, we rarely question how this data was obtained. While there is widespread confidence among anthropologists in the various methods routinely used for sexing, there is, to our knowledge, no clear consensus on how many traits need to be present for the sexing of cremated remains to be considered reliable. For this, and other reasons, several authors have expressed concern about the accuracy and reliability of sexing in cremation deposits, and some have even shown that multiple experts can produce different results for the same individuals. To identify patterns in sex estimation practices, we examine the available archaeological literature and use basic text-mining tools. The first part of the paper presents a review of methodological papers and observes the applicability of the methods presented therein. An inventory of available tools for sexing cremation deposits is also compiled. The second part of the paper presents a review of case studies of cremation deposits obtained from Web of Science and Google Scholar. The aim is to assess the extent to which researchers use the available tools and how they report the degree of certainty of their estimates. This research aims to provide insights into current practices, as well as reflect on the future of sexing of cremation deposits in the context of this session, and for anthropologists working on cremation deposits in the field.

6 BIOLOGICAL SEX ESTIMATION OF CREMAINS: A FIRST PROPOSAL FOR STANDARDIZING CRITERIA

Abstract author(s): Cortesão Silva, Filipa (Department of Prehistory and Archaeology, University of Seville; Research Centre for Anthropology and Health, University of Coimbra) - Gonçalves, David (Research Centre for Anthropology and Health, University of Coimbra; Archaeosciences Laboratory, Directorate-General for Cultural Heritage; Laboratory of Forensic Anthropology, Center for Functional Ecology, University of Coimbra)

Abstract format: Oral

In the anthropological analysis of cremains, biological sex estimation is a largely debatable issue. Some researchers consider it unreliable because of heat-induced changes affecting burned bone remains, while many others attempt it, nonetheless. The latter, although indicating the methods applied, rarely explain the specific criteria used for sex attribution. Moreover, even when that is the case, a lack of uniformity is noted among scholars since no widespread protocols are available. As a result, this procedure is imbued with doubts and criticism. As a contribution to fill this gap, the present paper aims to discuss and propose a first draft for future guidelines to sex estimate burned skeletal remains.

To this end, and under the light of the still lacking systematic research on the reliability of sex estimation on this kind of material, an assessment of the most appropriate methods is made, linked to an overview of the skeletal parts most frequently found in cremation graves. A first draft concerning the most suitable criteria to take into consideration during sex estimation process will be presented. Special emphasis will be given to the minimum conditions for considering an individual female or male, versus undetermined sex. We hope this work may boost the development of guidelines allowing, in the near future, the optimization and standardization of methodological procedures. This step is essential for the assessment of bioanthropological data achieved in different studies, as well as a more rigorous knowledge of the funerary practice of cremation.

7 HISTOMORPHOMETRIC METHOD ON CREMATED HUMAN BONES FOR AGE-AT-DEATH ESTIMATION

Abstract author(s): Bantavanou, Panagiota (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace) - Pavlidis, Pavlos (Laboratory of Forensic Science, Department of Forensic Medicine and Toxicology, Democritus University of Thrace) - Valakos, Efstratios (Department of Biology, National and Kapodistrian University of Athens) - Siegmund, Frank (Abt. Ur- und Frühgeschichtliche Archäologie, Department of History, University of Münster) - Moraitis, Konstantinos (Department of Forensic Medicine and Toxicology, National and Kapodistrian University of Athens) - Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

Abstract format: Oral

Age estimation on cremated individuals is a challenging task because high temperatures (>300°C) prevent standard anthropological methods to perform efficiently. Up to date, histomorphological/metric methods can estimate age-at-death of inhumed individuals with standard estimation error of ± 3 -15 years, whereas the application of these methods on cremated individuals exhibit a high estimation error (>10 years). In this study, we present a new histomorphometric age estimation method based on an osteon population density (OPD) regression equation. For this, we used unburned femur samples from modern individuals of known age and sex (n=30) from forensic cases resulting on standard estimation error of ± 3 years. To make it effective for cremated bones we experimentally cremated partially femur cross-sections from the same modern individuals (n=23) at different temperatures (>300°C) using high temperature muffle furnace (CWF). The analysis of the experimentally cremated bones included measurements of the dimensions and occupation area (mm²) of the same microstructures as the unburned bones i.e., secondary osteons and osteon fragments, aiming to estimate the percentage of shrinkage of bone microstructures and calculate the OPD values. For every individual we applied mathematical correction of the OPD value by subtracting the extra density (mm²) of the microstructures resulted from the shrinkage, restoring the initial density number of osteons before cremation. The preliminary results suggest that this modification of the values provides more accurate age estimations for cremated individuals.

Funding: Co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call Research-Create-Innovate (project code T2EDK-00152)

8 THROUGH THE FIRE: NEW WAYS TO IDENTIFY MATURE ADULT INDIVIDUALS AND VITAMIN D DEFICIENCY IN CREMATED HUMAN REMAINS

Abstract author(s): Veselka, Barbara - Snoeck, Christophe (Vrije Universiteit Brussel)

Abstract format: Oral

Understanding past populations and reconstructing their social roles is an important aim of anthropological and archaeological research. Fundamental variables are age, sex, and pathological anomalies with which life stages and attributed social roles can be reconstructed. The challenging nature of cremation deposits, being fragmented and incomplete, often hinders the assessment of these variables. In particular, age-at-death can be difficult to estimate and often only broad ranges (e.g. 18+ years) can be assigned. This impairs the identification of older adults and precludes the interpretation of the social roles those older adults had in past populations. The investigation of palaeopathological conditions fundamentally increases our understanding of a wide range of sociocultural variables, such as past living conditions, child rearing practices, dietary transitions, gendered division of labour, and social inequality. Yet, identification of these palaeopathological anomalies is almost exclusively reserved for inhumed individuals. This paper presents two novel methods that markedly decrease some of these lacunae. The first one, the Falys-Prangle method, assesses morphological changes to the sternal clavicle end allowing the distinction of ages-at-death over 40 years. The second method is used to diagnose vitamin D deficiency in cremated human remains, which was not possible until now. Recent research demonstrated interglobular dentine, a mineralization defect attributed to vitamin D deficiency, to still be visible in burnt teeth. Applying both methods to cremated human remains will allow the identification of older adults within burial sites, markedly contributing to our understanding of a wider range of life stages and attributed social roles within past populations. Furthermore, identifying vitamin D deficiency in populations that practiced cremation, will tremendously increase our knowledge of daily activities related to sunlight exposure and further aid in reconstructing social roles.

9 LIFE AND DEATH AT ROMAN LEGIONARY FORTRESS IN NOVAE, BULGARIA. COMPILING THE OSTEOBIOGRAPHY BASED ON CREMATED HUMAN REMAINS.

Abstract author(s): Jaskulska, Elzbieta (University of Warsaw)

Abstract format: Oral

“Osteobiography” is a term of considerable history in bioarchaeological research. Since first developed in 1970’ by Frank and Julie Saul, it was defined as creating a life narrative for a single individual based on all information available from the skeleton. However, this approach is relatively rarely employed on human remains exposed to the influence of fire, as in the case of the cremation burial rite. The obstacles can be attributed to two main problems. First is the relatively complicated reconstruction of the biological profile. The second relates to the difficulty in recognising antemortem changes in the fragmentary and taphonomically damaged fragments. These problems together produce a significant impediment to palaeopathological analysis and form a gap in the understanding of health issues in the past. The presentation will explore the unique analysis of two individuals excavated in bustum type graves to the east of the legionary fortress of Novae in Lower Moesia (nowadays Bulgaria), excavated in 2018 and 2019 by a team of archaeologists from the University of Warsaw. The intact condition of the burials and good preservation of remains allowed for recording a series of antemortem lesions, allowing for reconstruction of the diseases and way of life of these persons. The presentation focuses on bringing together the story of two individuals belonging to the Roman settlement. Although a differential diagnosis was not undertaken, the gathered information allows a glimpse into the life and death at Novae legionary fortress in the second to third century CE.

10 STATURE ESTIMATION OF BURNED HUMAN SKELETAL REMAINS - VALIDATION AND LIMITATIONS OF THREE DIFFERENT APPROACHES

Abstract author(s): Wolska, Bogumila (Institute of Archaeology and Ethnology Polish Academy of Sciences) - Vassalo, Ana (Laboratory of Forensic Anthropology, Department of Life Sciences, Centre for Functional Ecology, University of Coimbra; Department of Life Sciences, Research Centre for Anthropology and Health - CIAS, University of Coimbra; Molecular Physical-Chemistry R&D Unit, Department of Chemistry, University of Coimbra) - Marques, Maria (Molecular Physical-Chemistry R&D Unit, Department of Chemistry, University of Coimbra; Department of Life Sciences, University of Coimbra) - Batista de Carvalho, Luís (Molecular Physical-Chemistry R&D Unit, Department of Chemistry, University of Coimbra) - Gonçalves, David (Laboratory of Forensic Anthropology, Department of Life Sciences, Centre for Functional Ecology, University of Coimbra; Department of Life Sciences, Research Centre for Anthropology and Health - CIAS, University of Coimbra; Archaeoscience Laboratory, Directorate General for Cultural Heritage - LARC/ CIBIO/InBIO)

Abstract format: Oral

Heat-induced changes in bone obstruct the application of metric methods used for human stature estimation. Only a few researchers have attempted to overcome these difficulties, but their proposed approaches have not been verified so far. For this reason, we strived to evaluate the reliability of three different methods, namely (i) the Rösing’s method, (ii) a 10% shrinkage correction factor and (iii) chemosteometry. The first two relied on adopting a fixed shrinkage correction factor to stature calculation, while the latter required the FT-IR profile of the bone that predicts its precise shrinkage. Our investigation benefited from 46 skeletons of known sex and age-at-death comprised in the 21st Century Identified Skeletal Collection (University of Coimbra) that were subjected to experimental burns from 700 to 1100°C (attained after 90-188 min). The humeral, radial and femoral head diameters were measured before and after the experiments. Stature estimations were performed through them by application of the three approaches and based on the method proposed by Olivier and Tissier. Absolute mean differences between the estimations obtained on both unburned bones (control) and burned bones were then calculated. The results showed that the chemosteometric approach allowed for potentially more precise stature estimations than Rösing’s method and the 10% shrinkage correction factor. Nevertheless, all approaches were well within the error margin reported by Olivier and Tissier, as was supported by TEM% values smaller than or close to 1%. The advantage of chemosteometry was expected, since it appears to enable a more accurate assessment of heat-induced shrinkage. Additionally, the method can be routinely applied to all bones, regardless of the degree of heat-induced changes. In contrast, the application of the other two approaches is reserved only for calcined bones, although they have the advantage of not requiring further-IR analysis.

A. VIRTUALITY VS REALITY: COMBINING VIRTUAL AND PHYSICAL APPROACH FOR THE ANALYSIS OF MIDDLE-LATE BRONZE AGE URNS FROM NORTHERN ITALY

Abstract author(s): Scalise, Lucia Martina (Department of Archaeology, University of Cambridge) - Morigi, Maria Pia (Department of Physics and Astronomy “Augusto Righi”, University of Bologna; National Institute of Nuclear Physics - INFN - Bologna Division) - Cavazzuti, Claudio (Department of History and Cultures, University of Bologna; Department of Archaeology, Durham University) - Brancaccio, Rosa (Department of Physics and Astronomy “Augusto Righi”, University of Bologna; National Institute of Nuclear Physics - INFN - Bologna Division) - Seracini, Marco (Department of Physics and Astronomy “Augusto Righi”, University of Bologna; National Institute of Nuclear Physics - INFN - Bologna Division) - Bulletti, Clara - Leoni, Cristina (Department of Cultural Heritage, University of Bologna) - Stoddart, Simon (Department of Archaeology, University of Cambridge) - Benazzi, Stefano (Department of Cultural Heritage, University of Bologna) - Pomeroy, Emma (Department of Archaeology, University of Cambridge)

Abstract format: Poster

When cremation is involved, osteologists usually handle highly fragmented and altered remains. This study aims to improve the quality and quantity of information that could be retrieved from the study of cremains by combining two analytical approaches. We performed CT (Computerised Tomography) analysis of ten non-excavated urns from the Middle-Late Bronze Age (15th-12th centuries BCE) necropolis of Vicofertile (Parma, Italy) before inevitably altering the burials with micro-excavation. After the extraction of the remains from four out of ten urns, we reconstructed the individuals' biological profiles, analysed the heat-induced changes to the bones, and compared the preliminary results of the two approaches. We suggest the substantial limit to virtual analyses is technical. Using a 200 kV X-ray beam, we obtained images with sufficient quality for five samples out of ten because of the high density of the clay-rich soil embedding the bones. However, the qualitative and quantitative virtual analysis of the distribution of the remains inside the vessels provided information about the funerary practices. We assessed the potential presence of grave goods and the general taphonomy of the bones and pottery (e.g. fracture morphologies). Non-adult and adult remains were also identified, as well as potential samples for chemical analyses (e.g. teeth and petrous bones for isotopes and proteomic analyses), preventing further fragmentation or dispersion during the excavation. The results of the virtual approach were mostly confirmed by the physical investigation of the first four burials. The exceptions were regarding the bones' taphonomy (e.g. the presence of concretions that were not identified in the scans) and the addition of data about the individuals' sex and age at death. The scans proved to be an essential tool to guide and speed the excavation process and help preserve the completeness of the vessels and potential metal objects and facilitate their restoration.

B. THE CREMATION WEIGHT AND THE BIOLOGICAL PROFILE OF INDIVIDUALS AT THE ROMAN PERIOD CEMETERY OF BRUDNICE, POLAND

Abstract author(s): Dzierlinska, Monika (Faculty of Archaeology, University of Warsaw)

Abstract format: Poster

The examined remains came from the multicultural cemetery dating to the Roman Period, discovered in the Brudnice site 5, Poland. The aim of the research was to reconstruct the biological profile (including the total weight per the cremation deposit) of the individuals as well as analyse the differences in weight between various demographic and cultural groups. This way, repetitive patterns in total weight of the cremation deposits can be observed.

The examined collection contains 126 burials of the Wielbark culture, dating to the Younger and Late Roman Period and 54 burials of the Przeworsk culture, dating to the Early Roman Period. The total weight of cremated remains was documented after 2 mm sieving. For biological profile assessment, standard methods have been applied when available. When the diagnostic elements were missing only distinction between non-adults and adults was possible.

The average weight of the Wielbark culture's single burials of adult individuals was 171.9 g (n=77), while on the male burials it was 732.8 g (n=6) and on the female's only 474.5 g (n=12). For the non-adult burials the average weight was 27.5 g (n=29). The average weight of the Przeworsk culture's adult burials was 771.5 g (n=32). On the male burials it was 1134.8 g (n=5) and on the female's 806 g (n=15). For the non-adult burials the average weight was 65.2 g (n=16). The comparison of the results between Wielbark and Przeworsk culture indicated a significant differences in most demographic groups.

There are no reasons to believe that differential post-depositional preservation alone could account for such disparity. All discussed graves come from one site with small area and short chronology of its use.

The presentation aims to show the results of the research and discuss whether the recorded patterns in the total weight at Brudnice indicate differences in ritual practices.

SKILLS FOR THE FUTURE? [TEACHING AND TRAINING COMMUNITY]

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Geary, Kate (Chartered Institute for Archaeologists) - Karl, Raimund (Universität Wien) - Jones, Cara (Chartered Institute for Archaeologists)

Session format: Round table

The ways by which archaeologists gain the knowledge and skills they need are varied, from traditional academic teaching to vocational training and experiential learning. The priorities for teaching and training will also vary across jurisdictions and different types of institution – some may focus on traditional delivery mechanisms and curricula, others on passing on skills already available or addressing immediate skills gaps. This session will attempt to look into the future to ask what are the skills archaeologists will need five, ten or twenty years from now? How good are our mechanisms for identifying, and addressing, future skills challenges before they become acute? Or are we destined to be, literally, stuck in the past equipping archaeologists with skills that are no longer needed or preparing them for jobs that no longer exist?

During this roundtable, we would like to explore

- How future skills needs are identified and addressed
- How we can improve the way we prepare archaeologists for the careers of the future
- How new concepts, approaches or methodologies can be better integrated into teaching and training
- The mechanisms for better knowledge transfer between different branches of archaeology

We invite participants to contribute their thoughts, challenges and case studies to the discussion. We particularly welcome contributions addressing future skills needs in heritage management, in relation to the impact of climate change and in public archaeology and delivering social value and contributions which consider how we might need to adapt to deliver to more diverse audiences in the future.

URBAN AND UNDERGROUND ARCHAEOLOGY EXPOSED: 15 YEARS CULTURAL HERITAGE EXPERIENCE AND PUBLIC OUTREACH [URBAN ARCHAEOLOGY]

Session theme: 3. Heritage Narratives and Representations

Session organisers: Os, Bertil (Cultural Heritage Agency of the Netherlands) - Wijk, Theo M.A. (Domunder, Utrecht) - Bouwmeester, Jeroen (Cultural Heritage Agency of the Netherlands) - Belford, Paul (Clwyd-Powys Archaeological Trust) - Wiehen, Michael (Stadt Koeln)

Session format: Discussion session

In 2009 the EU funded initiative Portico started research on how to integrate urban developments with underground archaeological visiting centres. In this project the dissemination of knowledge about building, maintaining, exhibiting an underground visitor center and involving the public stood central. Initiatives had been launched at various locations in Europe, for example in Gent, Cologne and Utrecht. But much has also been done outside this project to make underground archaeological remains visible and experienceable in public spaces.

This main session of the EAA Urban Archaeology Community focusses on what has been done in this area over the past 15 years, what it has achieved, but also what, if anything, could have been done better. We would like to focus on two specific themes:

- Building (underground) visiting centres around archaeological remains;
- Integrating archaeology in public space.

We would like to suggest the following topics:

- Evaluation of 15 years' experience of developing exhibited (underground) archaeological sites.
- How to build an (underground) visitor center (best practices)
- Managing and monitoring the exhibited archaeological sites
- How to combine in-situ preservation and exhibiting archaeology: site protection versus site exposition
- Impact of climate change on (underground) exhibitions (groundwater tables/ floods)
- Indoor climate and vulnerable remains (fungi, efflorescence; drying out)
- Outdoor climate and vulnerable remains (rain, sun, frost)
- Training guides and volunteers.
- Public outreach
- Making archaeology attractive (stories, VR, apps, websites)
- Preserving archaeological remains in relation to the great spatial pressure in cities

In this session we will explicitly not focus on one specific period and region and welcome papers from within and outside Europe.

1 THE LONG WAY TO THE JEWISH MUSEUM IN COLOGNE

Abstract author(s): Wiehen, Michael (City of Cologne)

Abstract format: Oral

Work on the construction of the “MiQua-LVR Jewish Museum in the Archaeological Quarter of Cologne” has been underway in the centre of Cologne since 2007.

An area of the Roman governor’s palace, excavated in 1957, will be connected with an area that has been uncovered since 2007 on the adjacent Rathausplatz to form a 6500m² underground accessible museum landscape.

The future museum is located in an outstanding position in terms of urban development. In Roman times, the multi-phase praetorium stood here on the front to the Rhine with public buildings adjoining to the south, such as a thermal bath complex.

From the 11th century, the archbishop settled the Jewish community here, which subsequently developed its own city quarter around the synagogue and mikvah in the centre.

A column-free rising building is currently being erected above these community buildings, which required a special construction technique due to its span of 40m.

As the course runs underground without barriers through the cellars and foundations of these nested construction phases, a variety of questions had to be considered in the planning.

- How are the necessary lines for electricity, power and ventilation integrated into the archaeology?
- How can the closed basement rooms be made accessible?
- How can the Roman and medieval walls, which were not founded deep enough, be secured?
- How can the exposed earth profiles be integrated into the course?
- How does the air conditioning of this underground part of the museum work?

The lecture will present the solutions to these questions.

2 UNDERGROUND ARCHAEOLOGICAL MONUMENTS: CASE STUDIES FROM THE NETHERLANDS

Abstract author(s): Schreurs, José - Van Os, Bertil (Cultural Heritage Agency of The Netherlands)

Abstract format: Oral

The basis for protection of archaeological monuments in the Netherlands is to preserve cultural sites for future generations to learn and to wonder and for future research to understand past cultures. Preserving archaeological remains in situ is one of the main objectives of the Valletta Treaty, which was signed by the Dutch government in 1992. Subsequently, preservation in situ has become one of the pillars of archaeological heritage management in the Netherlands. Another objective of the Treaty is the promotion of heritage education and raising +public awareness for the protection and investigation of archaeological heritage. Until recently, this goal has received too little attention. In addition, the Faro treaty, which is in under consideration by the Dutch government, promotes participation of the public in all cultural heritage aspects.

In the last 15 years several archaeological monuments have been exposed to the public in the Netherlands. Two of them were already accessible for the public but were renovated for larger reach, safety and preservation. Two have been developed as new visitor centers.

The Cultural Heritage Agency was involved as all these sites were listed monuments. For one case, Rijckholt neolithic flint mines, the renovation was subsidized by the agency. The cases were completely different; the initiators varied from municipalities, private parties or church organization and the degree of participation of non-professionals also varied. They all had different goals, had different construction times and planning schedules. However, in all cases the common factor was the preservation and exposition of the archaeological remains and the involvement of volunteers. In this paper we will discuss each case and lessons learned will be shared and discussed.

3 THE LESSONS OF 15 YEARS DOMUNDER

Abstract author(s): Wijk, Theo (Transformation) - Os, Bertil (RCE) - Wynia, Herre (Municipality Utrecht)

Abstract format: Oral

The design and building of an underground visitor center, DOMunder, raised an important question: How to transform a protected archaeological monument into an asset for the community and at the same time ensure long-lasting preservation? Not many parallels exist, as most archaeological sites in urban environments are seen as a burden for development. Sites are generally either excavated or left in situ; in both cases the archaeology remains invisible and inaccessible to the public. In the case of DOMunder, the conservation of the undisturbed clay profiles carrying all

historic events from roman occupation, to early missionary center, and developing Utrecht as the early Medieval religious center of the Low Countries, combined with three phases of Church building, provided even more challenges. In addition, the center is built in excavation pits that were dug in the 1949, by the Dutch prominent archeologist van Giffen. However, carefully sieving and modern metal detection of the material van Giffen excavated, revealed additional more than 100.000 finds among which an early Medieval coin treasure and remnants of bell making. Furthermore more than 200 guides were trained that allowed the more than 50.000 visitors to come in contact with their Roman and Medieval past. All of this would have not happened if strictly the in-situ preservation rule was followed. Instead, the building of the center allowed for very closely monitoring the quality of the site and anticipating the effects on archaeological remains of recent prolonged droughts and excessive rainfall due to climate change.

This presentation will focus on the outcome of 15 years building, monitoring and using the site from perspective of cultural heritage management, the archaeologist, the initiators, site maintenance and the public.

4 KILKENNY ABBEY QUARTER URBAN HERITAGE REDEVELOPMENT PROJECT - A BLUEPRINT FOR ARCHAEOLOGICAL HERITAGE MANAGEMENT AND URBAN PLANNING IN IRELAND?

Abstract author(s): Stevens, Paul (Archaeological Management Solutions - AMS)

Abstract format: Oral

This poster presents a summary overview of an ongoing archaeological, architectural and cultural heritage management, and mitigation, of a large-scale riverside urban redevelopment project, located in the heart of the medieval City of Kilkenny and the grounds of a medieval abbey.

The Kilkenny Abbey Quarter development is centred on the former Smithwick's (Diageo) Brewery complex in Kilkenny City, which includes the upstanding and subsurface remains of several national monuments including St Francis' Abbey, St Francis' Well and Evans' Turret and City Wall, part of the medieval defences. In addition, there are multiple recorded monuments from the late medieval and post-medieval, riverside and industrial heritage of the City.

This poster presents the projects collaborative and multi-disciplinary approach, and showcases the key findings, methodologies, outputs, results, and research agendas arising from the past seven years work. This project is an exemplar for sensitive and sustainable large urban redevelopment projects, where industrial and archaeological heritage can be incorporated, displayed and weaved into new public urban spaces, parks and mixed commercial-residential development.

Present by: Dr Paul Stevens and Dr Richard Clutterbuck

AMS-Archaeological Management Solutions (Kilkenny)

408 QUALITY MEASURES FOR MASS- AND AUTOMATED RECORDING OF ARCHAEOLOGICAL DATA

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Riebschläger, Fabian (Deutsches Archäologisches Institut DAI) - Novák, David (Institute of Archaeology of the Czech Academy of Science) - Roesler, Katja (Römisch-Germanische Kommission - RGK/DAI) - Auth, Frederic (Universität Frankfurt)

Session format: Regular session

High-quality research data forms the basis of scientific research. To guarantee and objectively evaluate the quality of research data, some research projects and institutions are working towards the development of measures and applicable control mechanisms. Quality control is essential and should ideally be carried out at various stages in the data life cycle. Without it, research data cannot be re-used beyond the project's original scope and cannot be FAIR or LOUD.

However, appropriate metrics for ensuring high-quality data and their integration into the research process is still poorly discussed beyond single projects or across institutions. In general, only formal and technical aspects of the data and metadata (e.g. the resolution of images or naming conventions) are integrated directly into the processing pipeline in an automated way. While virtually no metrics for evaluating the content or scientific validity of data currently exist.

This session addresses quality measures of data in archaeology and neighboring disciplines from multiple perspectives, inviting the wider archaeological community to explore key questions such as:

- How can we better understand and measure the data and metadata quality of archaeological data?
- How do we reflect differences in records of scientific data and interpretive or deductive reasoning?
- Which methods ensure and improve data quality?
- How can we implement quality checks in automated data collection workflows?
- How can we optimize archaeological data and metadata for re-use?

We also invite papers that stem from specific case studies or projects that address the above-mentioned questions in a practical manner. For instance, the experience of large scale research projects working with big data, the utilization of rapid inventory of large quantities of data, the use of new methods in the processing pipeline like machine learning and statistics, or the presentation of best practices from established guidelines.

ABSTRACTS

1 QUALITY ASSURANCE AND BIG DATA: DEVELOPING A MACHINE LEARNING MODEL FOR THE IDENTIFICATION OF ARCHAEOLOGICAL LANDSCAPE FEATURES

Abstract author(s): Curran, Susan (The Discovery Programme; Institute of Archaeologists of Ireland) - Corns, Anthony - O'Keeffe, John - Shaw, Robert (The Discovery Programme) - Kokalj, Žiga (ZRC SAZU) - Kocev, Dragi (Bias Variance Labs) - Čož, Nejc (ZRC SAZU) - Dimitrovski, Ivica - Kostovska, Ana (Bias Variance Labs) - Davis, Stephen (University College Dublin)

Abstract format: Oral

Comprising a European-wide interdisciplinary team with experts from archaeology, remote sensing, earth sciences, and machine learning, the TII (Transport Infrastructure Ireland) ALS Machine Learning Research Project aims to develop a user-friendly opensource software tool capable of automatically detecting archaeological features across the Irish landscape. This includes the development of a 'trained' machine learning model that can automatically detect three classes of archaeological earthwork monuments from ALS data.

High quality data were essential throughout all aspects of the project, from monument selection, ALS datasets and derived visualisations, coding, testing, and validation. During the creation of the ALS training data, specific focus and efforts were made in data improvements and standardisation.

The identification of suitable archaeological monument types was a challenge as the quality of this dataset was crucial in providing the best chance of a successful outcome. With c.480 individual monument classifications, careful consideration was given to select those monument types that would have, among other criteria, sufficient topographic expression and a sufficiently large volume of recorded examples.

Once the monument types were identified, more than 10,000 segmentation polygons defining the visible topographic extents of the features were digitised for testing and validation of the machine learning model. However, archaeological remains are not uniform and there can be significant differences in quality within the monument classifications and across morphology and survival. For example, a ringfort can have one or multiple enclosing features, ranging from c.15m to over 80m in diameter. Moreover, in terms of survival, they can vary from excellent preservation with clearly visible features, to almost completely obscured by vegetation, or completely destroyed or removed.

This paper presents the methods and decision-making applied in developing the model; discussing the various challenges and evaluation of key processes used to ensure the best quality data, metadata, and paradata throughout the project.

2 ACCURACY OF 3D POINT CLOUDS GENERATED BY PHOTOGRAMMETRY BY COMPARISON WITH THE LASER SCANNING

Abstract author(s): Zhao, Xinyan - Ogawa, Takuro - Hori, Yoshiki (Kyushu University)

Abstract format: Oral

Several methods for three-dimensional measurement of ancient remains and artifacts such as photogrammetry, optical scanning and laser scanning, are developed, applied and popularized in archaeological sites in recent years. Among these, photogrammetry is often used for the documentation, but its accuracy and precision are not estimated in most cases. When dealing with 3D data, it should be taken into account that, usually, an analyzing of matched points from multiple images is carried out by internal software provided by the manufacturer, then the applied methodology is hidden in a 'black box' whose procedures may hardly be reconstructed. Unlike laser scanner and optical scanner whose accuracy of measurement is guaranteed, photogrammetric processing algorithms can be easily influenced from problems with the image quality (noise, low radiometric quality, time-shifting shadows, etc.), resulting in inaccurate 3D models. Although these automated processes are rapidly and popularly being adopted by archaeological projects, the user should always keep in mind the purpose of the 3D reconstruction and making clear the difference between nice-looking and realistic 3D models and accurate 3D results, and which is important for any given application.

Based on above, this study attempted to use some basic geometric objects in different shapes as research subject. And these models, generated by three pieces of commercial software of photogrammetry under several conditions such as different brightness scenes, outdoor light at different period of the day, and different capturing method, were transferred into points cloud and compared with those accurately generated by laser scanning. Then, the difference between the points cloud by photogrammetry and precis one by laser scanning was found, which also verified the

accuracy of photogrammetry. In addition, by comparing the accuracy of points cloud generated by photogrammetry under various conditions, we also figured out the conditions on getting an ideal model by photogrammetry.

3 IMAGINING ARTEFACTS: ORGANISING DATA FOR ML-BASED ARTEFACT ANALYSIS

Abstract author(s): Blochin, Jegor - Lashmanov, Oleg - Silaeva, Nina - Korolev, Alexandr - Vasiliev, Stanislav (independent)

Abstract format: Oral

The last five years brought an exponential growth of machine learning algorithms in humanities. Archaeologists profited from this general trend and we have seen a series of promising implementations of neural network approaches in different research areas - from landscape archaeology to artefact classification. Our team of researchers is working on developing a neural network based application for artefact analysis. The main function of the application is searching for analogies in archaeological databases from several research institutions. Photographs of artefacts made by researchers, museum staff and restauration specialists are used as source data.

Addressing different databases and diverse field-work traditions makes the question of quality control for the input data vital. In spite of common practices and guidelines for data collecting and storage, sophisticated preprocessing algorithms are required to ensure high quality of data used. In this paper we describe the data preprocessing pipeline, data storage formats and several neural networks in use.

For the data pre-processing we use a late fusion CNN for digital matting approach to retrieve only objects image without background and other noisy objects. In the second step we use image vectorization techniques based on VGG, Resnet and CLIP neural networks and search for similar images on vector similarity metrics. The output is presented as a series of matches found in the connected and preprocessed databases ranged according to their similarities. The application aim is working not only with images of intact artefacts but also with fragmented objects.

The results of recognition and matching are used in the analysis of archaeological collections with a focus on contacts, cultural exchange and knowledge transmission.

4 RECORDING THE RITUAL - A DIGITAL WORKFLOW TO RECORD LARGE QUANTITIES OF POTTERY

Abstract author(s): Auth, Frederic (Goethe-University Frankfurt; Römisch-Germanische Kommission - RGK/DAI)

Abstract format: Oral

In 2016 a sacred area dedicated to the god Iupiter Dolichenus has been excavated in the Roman vicus of NIDA/Frankfurt-Heddernheim (Germany). Within the temenos, over 80 pits have been found, associated with cult practices. These pits mostly contained pottery and animal bones in large quantities, which are currently thought to be connected with ritual feasting and the deposition of remains of those actions.

The main question of this project is, whether it is possible to grasp the rituals which have taken place in the Roman vicus of NIDA and to try to focus in on the people carrying out those actions and rituals.

Especially the large number of ceramic finds have created challenges in properly recording and storing research data. One specific challenge lies in ensuring a high and sustainable data quality, another one is the selection of criteria which are to be recorded in the first place.

This contribution shall explore an early work-in-progress attempt to implement a digital workflow of selecting, recording, drawing, storing and finally processing large quantities of data on Roman pottery, from gathering of visual information through the laser-aided-profiler (LAP), standardising the input and collecting it in a database, to running analyses on the streamlined results. The aim is to provide high-quality, reusable research data-sets through means of rapid mass inventory tools and quality control measures.

5 APPLICATION OF MACHINE LEARNING AND BIG DATA ANALYTICS TECHNIQUES IN ARCHAEOLOGICAL RESEARCH

Abstract author(s): Karamitrou, Alexandra - Sturt, Fraser (University of Southampton, Department of Archaeology)

Abstract format: Oral

Over the last decade numerous satellite and aerial remote sensing instruments are scanning our planet over a wide range of the electromagnetic spectrum, providing unprecedented amount of data that are commonly openly available, causing a revolution in archaeological prospecting.

Due to the abundance of data, common tasks in research that include storage and processing became challenging, while analysis and interpretation are prohibitive solely by human analysts, requiring automated, systematic, and quantitative analysis.

In this work we demonstrate the application of machine-learning methods and big data analytics techniques in three different archaeological projects. On the first we show that a trained eight-layer, fully convolutional network can identify archaeological sites of various characteristics from around the world, using openly available satellite imagery. The second project in a similar manner uses satellite imagery and a trained deep-learning model to indirectly detect shipwrecks on coral reefs, by exploiting a discoloration of the reef that is caused from the iron contamination due to the corrosion of the wreck, a phenomenon known as “black reefs”. The third project utilizes image processing and computer vision algorithms for the detection of islets within thousands of lochs covering the whole region of Scotland. Next, a trained deep-learning model is applied to identify which of those are crannogs.

6 A MACHINE LEARNING APPROACH FOR THE DIMENSIONAL RECONSTRUCTION OF THE LAMINAR ARTEFACTS OF THE MPPNB SITES IN THE SOUTHERN LEVANT

Abstract author(s): Nobile, Eugenio (Institute of Archaeology, Tel Aviv University) - Troiano, Maurizio - University of Rome) - Mangini, Fabio - Mastrogiuseppe, Marco (Department of Information Engineering, Electronics and Telecommunications DIET - University of Rome) - Vardi, Jacob (Israel Antiquities Authority) - Frezza, Fabrizio (Department of Information Engineering, Electronics and Telecommunications DIET - University of Rome) - Conati Barbaro, Cecilia (Faculty of Prehistoric Archaeology, University of Rome “La Sapienza”)

Abstract format: Oral

The lithic industry of the Pre-Pottery B is based on the laminar reduction process that often ends with the production of tools made largely out of blades and secondly on bladelets. However, the artifacts state of conservation doesn't always allow to have a complete dimensional set of data. The presence of broken laminar blanks due to the post-depositional processes is indeed high in many sites. In order to solve such problems, we propose a machine learning analysis as a neural network approach for an automatic reconstruction of missing dimensional data based on a standardised measurements' recording of laminar artefacts's dimensions.

In Machine learning there are indeed two distinct models, one is called a supervised learning model and the other an unsupervised one, the latter is used to discover internal structures in datasets. In our case, we chose the supervised learning model, in which a feed-forward type neural network is trained with an input data vector that corresponds to a pre-established output vector, the algorithms used for learning are the Bayesian regularisation, the Levenberg-Marquardt and the Scaled conjugate gradient back-propagation. Particular attention has been paid to avoid underfitting and overfitting problems.

The neural network analysis has been carried out on Middle PPNB sites from the Southern Levant such as Nahal Yarmouth 38, Motza, Yaftahel, and Nahal Reuel.

7 IMPROVING INTERDISCIPLINARY DATA ACQUISITION METHODOLOGIES BY ALGORITHMICALLY PIECING TOGETHER ARCHAEOLOGICAL 3D PUZZLES

Abstract author(s): Mircea, Cristina (Department of Molecular Biology and Biotechnology, Faculty of Biology and Geology, Babes-Bolyai University; Molecular Biology Center, Interdisciplinary Research Institute on Bio-Nano-Sciences, Babes,-Bolyai University) - Mircea, Ioan (Department of Computer Science, Faculty of Mathematics and Informatics, Babes-Bolyai University) - Kelemen, Beatrice (Department of Molecular Biology and Biotechnology, Faculty of Biology and Geology, Babes-Bolyai University; Molecular Biology Center, Interdisciplinary Research Institute on Bio-Nano-Sciences, Babes,-Bolyai University)

Abstract format: Oral

Following up on previous research concerning the unsupervised clustering of pottery fragments based on texture and 3D curvature, and in the broader context of devising a novel data harvesting methodology to fit the needs of the current interdisciplinary approach to archaeology, we propose an algorithm for recreating a potential vessel from candidate pottery fragments from the same cluster. The issue is problematic to its dimensional and computational requirements (as usually, a significant number of pieces need to combine) and its necessity for novel interdisciplinary measurements to be employed to more clearly define the quality of the 3D reconstruction of the archaeological puzzle.

It follows a progressive puzzle-solving approach: firstly, the matchability between pieces is determined, then the problem becomes an optimization problem in a graph-like environment offering probabilistic candidate solutions to the reconstruction task.

The purpose of the current research transcends showcasing its ability to recommend pottery reconstructions from a cluster of pottery fragments. The focus is on its versatility for any generic form of archaeological puzzle-like problems (e.g. mass-burial skeletal recomposition).

The algorithm only shows its valor when presented as part of a more complex archaeological data harvesting methodology more fitted to the interdisciplinary needs of modern archaeology, especially concerning the field of machine

learning that requires a significant amount of qualitative training data. Therefore, it is just a pretext for opening a wider and broader methodological discussion on harvesting industrial quantities of qualitative scientific data, both manually and automatically, especially for the current machine learning needs of interdisciplinary research that might lead to the creation of novel data acquisition standardized protocols in the foreseeable future.

410 SOCIO-CULTURAL DIMENSIONS OF WATER MANAGEMENT IN CONTEXTS OF WATER SCARCITY

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Marsal, Roser (Universitat de Barcelona) - Salame G., María Fernanda (Uppsala University; Universidad Mayor de San Andrés)

Session format: Regular session

Water management, especially in water-scarce regions around the globe, constitutes a multi-faceted topic of remarkable historical significance, integrating different aspects of life, from the ecological to the socio-cultural parameters. In addition to environmental adaptation, water management involves the alteration of ecosystems, which has created constant links between the past and the present. The reuse, modification, and adaptation of water infrastructures demonstrate their continuing role in the socio-political organisation and cultural practices and their sustainability over time shows the resilience of the communities that managed them.

The socio-cultural implications around water management in water-scarce regions, often underexplored, intangible, or difficult to evidence archaeologically, can be considered among the most significant issues for humans. In contrast to the hydro-technological approach, which focuses on the physical infrastructure of water management, the socio-cultural approach addresses the multiple ways communities ensured the water supply from access to use.

Interpreting the archaeological record of physical structures from a socio-cultural dimension provides insights into essential questions about water management in contexts of scarcity:

1. How did societies ensure hydraulic systems' operation from their construction, maintenance, and use, and what practices did they develop?
2. Which strategies and social structures were defined by the communities to manage water resources and ensure water supply?
3. What kind of social and cultural transformations can be observed among the different communities, and what is their long-term legacy?

This session intends to explore how different approaches, often aided by historical and anthropological research, may complement each other within and between case studies to provide a more nuanced insight into the socio-cultural dimensions of water management in contexts of water scarcity. Papers may focus on reports, regardless of the type of infrastructure studied, theoretical frameworks, and specific methodologies related to this key research topic, from a broad chronological and territorial perspective.

ABSTRACTS

1 WATER STRATEGIES IN THE LATE INTERMEDIATE PERIOD CAQUIAVIRI

Abstract author(s): Salame, María (Uppsala University; Universidad Mayor de San Andrés) - Capriles, José (Pennsylvania State University)

Abstract format: Oral

Understanding the evolving dynamics between pre-columbian societies and their natural environment in the Highlands of Bolivia is a critical question for archaeological, historical, and ecological research. In this paper, we will discuss the economic strategies developed by the pastoral societies who inhabited the region of Caquiaviri in the department of La Paz – Bolivia, during the Late Intermediate Period (1100 – 1450 D.C.). This analysis will address the relationship between settlement location and their access to water management and supply sources based on the information collected during a regional survey conducted between 2014 and 2015*, satellite imagery, and the use of geo-referenced information systems (GIS). Through this analysis, we discuss the existence of a complex system of water reservoirs (cochas) and the use of geomorphological features in the landscape.

*The survey was conducted as part of the project “Reconocimiento del Patrimonio Arqueológico del Municipio de Caquiaviri” from the GIS lab at Universidad Mayor de San Andrés.

2 ANTHROPOGENIC LANDSCAPES AND WATER MANAGEMENT IN THE TIWANAKU VALLEY

Abstract author(s): Calla Maldonado, Sergio Alejandro (Universidad Mayor de San Andres; Instituto de Investigaciones Antropológicas y Arqueológicas) - Salame González, María (Uppsala University; Universidad Mayor de San Andres)

Abstract format: Oral

Lake Titicaca, one of the largest lakes in the world, is located in the Altiplano plateau, an arid environment, at an altitude of 3,812 m above sea level and has been the matrix for the development of several Andean societies in the past. It is the case of Tiwanaku, a complex statal society, known for its Civic-Ceremonial Center, recognized by UNESCO's World Heritage Convention. In this presentation, we will discuss the process of human adaptation and landscape transformation as part of the means of production and the water management strategies employed both on a small and large scale in the valley of Tiwanaku throughout time; from the beginning of the settlement process in the area until the fall of the Tiwanaku state. For this purpose, we will present the results of several regional studies conducted in the area that preserve the cultural memory of local communities and complex sociopolitical structures such as the Tiwanaku state.

3 MAPPING DESERTIFICATION IN SOUTHERN MOROCCO USING GOOGLE EARTH ENGINE

Abstract author(s): Rayne, Louise - Brandolini, Filippo (Newcastle University)

Abstract format: Oral

Earth observation is increasingly being used for recording ancient water management systems and monitoring land degradation. This research aims to assess the desertification rate in the southern Morocco, identifying areas of former, traditional cultivation which supported long-term oases since at least the medieval period. Traditional water technology can be resilient and can be linked with scientific methods (IPCC 2022).

In this paper, an open-source cloud procedure was developed to map desertification in the Ourzazate-Drâa area. We used Google Earth Engine (GEE) to apply this to a large data stack of over 200 Sentinel-2 and Sentinel-1 images and their derived products. The technique tasselled cap was applied to the Sentinel-2 data to divide it into brightest, greenest and wettest components. Sentinel-1 data in VV and VH polarisations was filtered by the same dates. Training data for 5 landcover classes (Desertified, Builtup, Bare, Treecover, Cropland) was produced and a Random Forest algorithm applied to the combined data stack. We compared this data to the location of traditional and ancient water management features digitised using high-resolution imagery. The region was investigated on the ground and the data validated in the field in November 2021 and 2022.

Areas of abandoned traditional fields were correctly identified by the algorithm. They were particularly distinguishable in the tasselled cap image, allowing them to be mapped using unsupervised classification. The Sentinel-1 data allowed areas of sand dunes and natural bare soil to be separated from the desertified fields. A small number of false positives were detected, generally representing areas of disturbed and natural sediment beside streams and roads. When combined with archaeological field data, our algorithm allowed us to detect both areas of fields which were recently desertified, and those which were abandoned prior to the oldest satellite imagery available (1960s-80s).

4 3D MODELLING AND SPATIAL ANALYSIS: A SOCIO-CULTURAL APPROACH TO WATER SUPPLY MANAGEMENT IN A SEMIARID REGION

Abstract author(s): Marsal, Roser (Universitat de Barcelona) - Carpallo, Jesús (Independent researcher)

Abstract format: Oral

The material components of water supply systems that have survived from the past, together with their human agents, are the key items of the operation and long-term feasibility of water management structures.

This paper presents the socio-cultural dimensions of the acquisition, use, and management of water supply systems at the site of Sela on the southern Transjordan plateau based on a photogrammetric model. The 3D model of the site has been designed using aerial photographs provided by the project "Aerial Photographic Archive for Archaeology in the Middle East" (APAAME). Based on this 3D modelling, this work presents a spatial analysis of the hydraulic infrastructures, the remains of urbanism, and a topographic analysis of the site. This modelling has allowed us to locate new hydraulic structures, previously unidentified by survey, and to obtain more detailed direct and indirect relationships between these infrastructures. In addition, the 3D model provided a reference to locate the various elements and correlate their surface with the topographic coordinates recorded by the total station during fieldwork. We have proposed spaces for access, management, and use of the available water resources. The interpretation of these spaces provides a basis for proposing hypotheses about how societies ensured hydraulic systems' operation, from their construction, maintenance, and use; the practices they developed; and community-defined strategies and social structures to ensure water supply and water management. Thus, this study complements research on the hydrological

and hydro-technical dimensions of water management, and water culture in Sela, contributes to its holistic analysis, and compares the outcome with the state-of-art on this subject in the area and worldwide.

5 WATER MANAGEMENT IN MYCENAEAN PERIOD. EVIDENCE FROM A TECHNICAL WORK FOUND IN EAST ATTICA, GREECE

Abstract author(s): Psallida, Maria (Ephorate of Antiquities of East Attica)

Abstract format: Oral

In 2016 and 2017, a technical work of irrigation system of the Mycenaean period was investigated in the site of Peania, East Attica of Greece. It consisted of two parallel retaining walls and built barriers, forming dams across the ravine in order to retain the water of the stream. The agricultural development, the need for water storage in case of drought, as well as the protection of cultivated land from flooding and the debris from the stream flowing down from the foothills of Mount Hymettus required the construction of flood control and land reclamation works. This construction is dated in two different periods of time and it was destroyed possibly in the end of LHIII B2 (1200 BC).

This paper focuses on the presentation of the prehistoric technical work found in the area of East Attica, in comparison with similar constructions revealed in several regions of Greece. These complex hydraulic works are developed in times of prosperity and technological development and therefore the findings from the region of East Attica, Greece indicate the existence of a population which had the knowledge of successful water management for agro-pastoral purposes.

6 WATER MANAGEMENT AMONG SOUTHERN VELEBIT COMMUNITIES

Abstract author(s): Vukovic, Morana (Archaeological Museum Zadar) - Serventi, Zrinka (University of Zadar)

Abstract format: Oral

Water as a crucial and life defining resource is especially problematic in karstic areas. The Velebit Mountain, although being an exceedingly karstic landscape, has been inhabited from the earliest times, which raises the question on ways and methods local inhabitants used to collect and manage water. The geomorphological characteristics of this territory, the permeability of limestone and lack of permanent water sources forced people to adapt and find ways to acquire this crucial resource. How successful the adaptation to such harsh environment was, is clearly attested by the continuity of life from prehistory to modern times, indicating the transference of knowledge.

In this paper we will, therefore, show how water resources were used and managed in the territory of southern Velebit, primarily during Iron Age, which will be based on archaeological finds and ancient literary sources as well as ethnological and more recent remains. We will also consider the impact those processes and activities had on the local societies and how their connections and networks were shaped by the scarcity of such vital resource - from the transhumance and markings in the landscape to distribution of settlements and trade patterns. In the end, although the primary focus will be on the southern Velebit, connections and similarities to other areas of Liburnia, the territory to which Velebit Mountain belonged to, will be considered as well.

A. INCA WATER CHANNEL FLOW ANALYSIS BASED ON 3D MODELS AT THE CHACHABAMBA ARCHAEOLOGICAL SITE (MACHU PICCHU NATIONAL ARCHAEOLOGICAL PARK, PERU)

Abstract author(s): Sieczkowska, Dominika (University of Warsaw, Center for Andean Studies; Silesian University of Technology) - Ćmielewski, Bartłomiej (Wrocław University of Science and Technology) - Bastante, Jose (National Archeological Park of Machupicchu - Dirección Desconcentrada de Cultura de Cusco – Ministry of Culture)

Abstract format: Poster

The Chachabamba archaeological site in the Machu Picchu National Archeological Park contains a unique water complex erected and modified by the Incas. Based on archaeological investigations within the ceremonial sector, it has been established that the function of this water complex was strictly ceremonial. The Incas' absolute necessity to control water flow in an architectural context is often associated with the need to apply water in a spiritual context. Moreover, hydrodynamic studies of the water supply canals have verified the previous, ritual-oriented, findings. Due to the complex characteristics of the site, which is largely overgrown by dense vegetation, we employed a methodology not previously applied in the region. Three-dimensional documentation techniques were used to produce hydrodynamic analyses of the site, which facilitated the preparation of appropriate models that are key to understanding the function of the entire water system. This type of volumetric analysis technique for measuring water flows was first applied in the region and the whole of Andes. In turn, we see great potential in the application of the described method of hydrodynamic analysis in the future. As there are many potential archaeological sites within Machu Picchu Park where this analytical method can be developed, the purpose of the presentation is to share the methodology used and discuss its possibilities and limitations.

WATER MANAGEMENT AND STORAGE SYSTEMS IN ANTIQUITY: ARCHAEOLOGICAL, HISTORICAL, AND ENVIRONMENTAL ANALYSIS OF HYDRAULIC STRUCTURES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Castro García, Maria del Mar (University of Granada) - Acero Pérez, Jesús (Department of Pre-history and Archaeology, University of Seville) - Felício, Catarina (CHAM - Centre for the Humanities, NOVA University of Lisbon) - Gangale Risoleo, Davide (UNICAL - Università della Calabria) - Le Bret, Jean-Baptiste (CNRS, UMR5140 - Archéologie des sociétés Méditerranéennes)

Session format: Regular session

Water is a resource of vital importance for humans, requiring efficient management and planning strategies for its use and control. Therefore, in Antiquity, hydraulic constructions were built to collect water from various sources (groundwater, rainwater or surface water) or to divert its flow. Likewise, although aqueducts, particularly in Roman times, allowed a greater supply in terms of water quality and quantity, it did not eliminate the practice of water catchment, which continued to be employed for a complementary use or with a storage strategy (to accumulate surplus or to avoid water shortages). We are referring to wells, cisterns, reservoirs, water channelling. These archaeological structures survived over time and were frequently reused, making certain dating difficult. In some cases, the typology of these structures is the result of the cultural influences of each community and its adaptation to the natural environment, otherwise a choice influenced by water law.

In this session we emphasize the importance of hydraulic infrastructures in the ancient world, with a particular focus on Europe and the Mediterranean region from Iron Age to Late Antiquity, both as exclusive or complementary means of water supply for human settlements, and also as a method of draining and evacuating water. Papers can present topographic, structural or volumetric analyses of these facilities, as well as their hydrogeological and environmental contextualisation. Contributions addressing methodological aspects focused on the research and archaeological record of these structures are also welcome, including remote sensing techniques for their detection, and GIS analysis. We also accept studies related to the historical background of these hydraulic constructions and their relationship to the cultural evolution of the ancient communities, as well as their role in water planning strategies.

ABSTRACTS

1 WATER SUPPLY IN THE PRE-ROMAN AND ROMAN OPPIDUM OF ZAHARA DE LA SIERRA (SOUTHERN SPAIN)

Abstract author(s): Castro García, Maria del Mar (University of Granada) - Cobos Rodríguez, Luis (Independent Research) - Martin Arroyo Sanchez, Daniel (University of Cádiz) - López Rodríguez, Antonio (Independent Research)

Abstract format: Oral

The water supply in Zahara de la Sierra (southwest of Andalusia, Spain) is attested by archaeological evidence that shows a diachronic evolution of the water management systems (3rd century BC - 18th century AD). Although rain is abundant in the region, the water supply was challenging because of the high altitude of the settlement (600 meters above sea level). Therefore, a thorough water management strategy was required for this oppidum-type settlement. Actually, hydraulic structures are the most significant archaeological vestiges on this site, with a notable presence of Roman cisterns and a conduit showing evidences that point to the same historical framework. The aim of this presentation is to propose hypotheses about the functioning of the hydraulic system from the pre-Roman (Turdetan) and Roman periods. To this end, we have investigated the oppidum and its hydraulic constructions through the technique of photogrammetry, allowing a topographic, volumetric and constructive analysis of them.

2 MONUMENTAL FOUNTAINS WITH STEPS FROM THE LATE IRON AGE IN SOUTHERN GAUL (2ND-1ST CENTURY BC)

Abstract author(s): Agusta-Boularot, Sandrine (University Paul-Valéry Montpellier 3; UMR5140-Archéologie des sociétés méditerranéennes) - Vacassy, Gregory - Vincent, Ghislain (Institut National de recherches archéologiques préventives; UMR5140-Archéologie des sociétés méditerranéennes)

Abstract format: Oral

The site of Glanum presents two remarkable monumental hydraulic installations: the „nymphaeum“ and the „dromos well“, one installed on a resurgence, the other on a water table. These fountains are imposing in terms of their dimensions, their depth and their construction techniques, made of large blocks (heavy masonry) with dry joints typical of the Hellenistic tradition. Their basin was covered. They belong to the period of monumentalisation of the site (2nd century - early 1st century BC). In the absence of parallels in southern Gaul, they were long considered unique. How-

ever, a recent excavation at Castelnau-le-Lez (Hérault) uncovered a 6 m long structure, consisting of a 3 m deep well, which was accessed by steps: this well drained the water that rose from the underlying limestone. Built from local limestone blocks using Gallic construction techniques, this well proves that this type of hydraulic monument – a perennial watering place accessible by a staircase – is of Gallic tradition, putting an end to the debate about the possible Greek origins of the Glanum fountain plan. In the latter case, only the monumental „rhabillage“ appears to be a Greco-Italian contribution. The current study of the so-called „Roman“ fountain at Murviel-lès-Montpellier (Hérault) leads to the same conclusions. This modern building was built on ancient foundations. The last of its three basins (3 x 2.45 m) also appears to be built of large shelly limestone blocks laid with dry joints. This „monumental“ basin is fed by four drains that collect the water that seeps through the faults in the limestone. Its construction is characteristic of the public buildings of the 2nd-1st century BC in Murviel and provides a direct parallel to the fountains of Glanum. These achievements shed new light on Gallic knowledge in the field of hydraulics.

3 THE WELL-BASED WATER SUPPLY SYSTEM OF THE ROMAN TOWN OF IESSO (CATALONIA, SPAIN)

Abstract author(s): Romaní Sala, Núria - Rodrigo Requena, Esther (Serra Hünter Fellow, Autonomous University of Barcelona)

Abstract format: Oral

The presence of abundant groundwater resources in the Guissona plain was one of the main factors that contributed to the foundation of the Roman town of Iesso in this location, at the end of the 2nd c. BCE. After 30 years of archaeological research in the northern district of the Roman town, a total of 5 water wells built between the 1st c. BCE and the 2nd c. CE have been documented. This evidence suggests that the use of the aquifer was a key element not only in the first phases of the town but also after the Tiberian period, when the city was probably supplied by an aqueduct. The aim of this contribution is to provide an overview of the evolution of the water catchment strategies in Iesso over time and the role that the water-wells played in the water supply of the town, especially during its coexistence with an aqueduct. Another issue that we will address with this paper is the specific extraction and water distribution methods related to these water-wells using the archaeological context of the structures and the interesting archaeological remains preserved inside the wells due to anaerobic conditions.

4 WATER MANAGEMENT IN A ROMAN CITY AT THE FOOT OF THE ALPS: AUGUSTA TAURINORUM AND THE WATERWORKS OF THE TOWN

Abstract author(s): Gangale Risoleo, Davide (Università della Calabria) - Ratto, Stefania (Soprintendenza Archeologia, Belle Arti e Paesaggio per la Città metropolitana di Torino)

Abstract format: Oral

From its foundation, between 25 and 15 B.C., the colony of Iulia Augusta Taurinorum was gradually provided with all the essential elements that defined a Roman civitas: gates, walls, sewers, streets, and the forum (the location of which remains hypothetical).

In addition to these basic infrastructures for defining the urban space, the hydraulic works necessary to collect, manage and distribute the territory's water resources were gradually built.

The available data, which are scarce and unevenly distributed throughout the city and its suburbs, have not yet allowed a complete reconstruction of Turin's water supply during the Roman period.

However, it seems possible to assume that, at the beginning of its foundation, the city was supplied with water only through wells and cisterns, and that the aqueduct was built from the late 1st century AD, at the same time as the other urban infrastructures were completed in the 1st century AD.

The aim of this paper is to clarify the current state of knowledge by merging the documentation of the research carried out by the Superintendency over the last few decades, only some of which has been published, and integrating it with the study of historical cartography and comparison with other contexts of the same chronological and geographical frame, in order to draw new interpretative conclusions.

5 WATER AND THE CITY OF VEII: A LINK BETWEEN MYTHOLOGY, RELIGION, ARCHEOLOGY, AND HISTORY

Abstract author(s): Fusco, Ugo (University of Rome „Tor Vergata“)

Abstract format: Oral

In recent years, the state of knowledge of the site has made significant leaps forward thanks to the publications of the British School at Rome and the multiyear 'Progetto Veio', started in 1996 from a convention between La Sapienza, University of Rome and the current Soprintendenza Archeologica, Belle Arti e Paesaggio per l'area metropolitana di

Roma, la provincia di Viterbo e l'Etruria meridionale. From a topographical point of view, the town of Veii stands on a plateau (h 185) and is skirted by two watercourses, both still active today: the Fosso Valchetta, the ancient Cremera, and the Fosso Piordo. The Aqua Traiana (early 2nd century AD) is known to have crossed the territory of Veii (CIL XI 3793), but did not reach the town itself. This paper aims to highlight the close link between water and the site starting from its foundation up to the Roman conquest and beyond. This bond has its roots not only in the historical and archaeological field, of which some reconstructions have recently been proposed, but also has close ties with mythology and religion.

6 WHAT DO WE KNOW ABOUT WATER SUPPLY AT MIROBRIGA (SANTIAGO DO CACÉM, PORTUGAL)? AN OVERVIEW OF THE DOCUMENTED STRUCTURES

Abstract author(s): Felicio, Catarina - Sousa, Filipe (CHAM - Universidade NOVA de Lisboa)

Abstract format: Oral

The first recorded mention of the site is by André de Resende, in 1593, in his *De Antiquitatibus Lusitaniae*. The passage explicitly refers to a bridge; an aqueduct; an enigmatic «squared stone from whence water would have flowed»; and little else.

In roughly 100+ years of on and off research excavations, a roman town emerged: With public buildings, several houses and workshops identified, as well some of the streets that connected them to each other and led to the outskirts. However, if the bridge has been always somewhat visible, said aqueduct was never identified. And what to say of the «squared stone»?

In effect, water supply is a somewhat elusive subject since there aren't traces of a supply network and public fountains or wells are yet to be found.

With some water springs identified in the area, individual buildings seem to have depended on their own means of supply. The two known bath buildings had large reservoirs dedicated to their water supply and some of the houses had private wells, but the means of supply for the remainder of domestic and commercial activities is still largely unknown.

In this communication we address these issues and analyse the known water collection and storage structures how it matches up against the town's documented water needs.

7 WATER STORAGE STRUCTURES IN PRODUCTIVE AND COMMERCIAL SPACES IN POMPEII

Abstract author(s): Sanchez López, Elena H. (Universidad de Granada)

Abstract format: Oral

Water studies, particularly those referring to Roman times, have focused on aqueducts as the main water supply structures, and on baths, public fountains and elite houses, as the main water consuming spaces. But other structures, such as wells and cisterns, were broadly used; and water was necessary in many other urban spaces.

The water supply system to Pompeii is one of the best studied ones in the Roman world, but the research has again focused on the distribution of the water supplied by the aqueduct and on the understanding of the system, especially on the water towers and the supply to the street fountains and the houses. However, there are many other spaces where water was fundamental, for instance many workshops. In this sense, water was essential for pottery production, textile works, basketry or food production, with the particularity that the individualization of these spaces is especially feasible in Pompeii. The aim of this paper is to analyze the presence of cisterns in Pompeian productive and commercial facilities.

8 RAINWATER CATCHMENT SYSTEMS AT POMPEII: DAILY OPERATION

Abstract author(s): Jansen, Gemma (Independent researcher/archaeologist)

Abstract format: Oral

Of old, people in the Roman town of Pompeii (Italy) gathered rainwater in cisterns and used that in their homes. Even after the installation of an aqueduct and the introduction of piped water into their houses, these rainwater catchment systems remained in use. The different parts, found in more than 1200 houses that have been excavated at Pompeii to this date, were aligned with each other to create a good working system: sloping roofs, waterspouts, impluvia, gutters in the garden, cisterns and puteals. In the meantime, these different parts and the technical aspects of these systems have been studied well, see for example Jansen (in press).

The human side of the system, however, has not been that much explored yet. Sure, the complete system was under supervision of the house owner and he was the one who decided to install the system and who subsequently managed its repairs and adaptations. But the daily hauling up of the water from the underground cistern, dragging full buckets through the house and the regular maintenance and cleaning of the different elements of the system was all done by slaves or other members in the household. So the Joshel and Hackworth book on Roman slaves (2014) was the

inspiration for this presentation, in which we will take a look at what actions and actors are involved in the daily use of rainwater in a household. Let us put the Pompeians to work!

- G. Jansen, in press, Rainwater collection strategies at Pompeii, in R. Bonnie and P. Klingborg (eds.) Water in Ancient Mediterranean Households, Routledge.
- S. R. Joshel and L. Hackworth Petersen, 2014, The Material Life of Roman Slaves, Cambridge.

9 THE VILLA UNDER THE LAKES. WATER MANAGEMENT OF NERO'S VILLA IN SUBIACO, ROME

Abstract author(s): Tozzi, Fabiana (Università di Roma Sapienza)

Abstract format: Oral

Subiaco, a town near Rome, is the heir of the villa built there by the emperor Nero before 60 A.D. This inheritance is not just for the territory, but especially for its name: this Roman villa was called Sublaqueum, that means “under the lakes” as actually the villa was. Indeed, it was divided in different buildings, at least five, surrounded by the mountains: this system of buildings and parks overlooked three artificial lakes. Therefore, Sublaqueum evokes the connection among buildings, nature and especially water. However, to be realised, this relationship required a complex system of structures and infrastructures: this speech focuses precisely on the water management strategies used for the construction of the Sublaqueum with different purposes. Firstly, along the Anio River, three dams and some bridges were built to cross the lakes. Certainly, such a demanding construction was not made just to create a wonderful landscape, that was only a collateral result: as it will be clear analysing both the villa and the Subiaco territory, this engineering effort was necessary for the water supply, connected with the different uses of the structures. Secondly, this villa was built in a highly rainy territory, as the name of the local mountains reveals: Simbruini Mountains, that means “under the rain”. Buildings were nestled in the excavated mountains: thus, it was necessary creating a ramified system for the water disposal and reuse. This aspect is particularly evident in the thermal pavilion where a complex and diversified plumbing system was used to collect water and to prevent it from becoming a problem, carrying where it was necessary and managing the surplus. Therefore, the Sublaqueum is an interesting case study for a sustainable water management, where the Roman water technology was used in different ways to make a potential problem a resource.

10 ROMAN DAMS IN HISPANIA. AN URBAN WATER SUPPLY SYSTEM?

Abstract author(s): Acero Pérez, Jesús (Department of Prehistory and Archaeology, University of Seville; UNIARQ - Centre for Archaeology, University of Lisbon)

Abstract format: Oral

In the territories of ancient Roman Hispania (current Iberian Peninsula) there are a large number of dams that have been attributed to this historical period. Some of them, located in the vicinity of important cities, have traditionally been interpreted as caput aquae of the aqueducts that supplied them. However, recent research has questioned the association of these structures with the aqueducts or even their time of construction. This paper aims to contribute to the debate concerning the chronology and function of some of these so-called Roman dams. For this purpose, we will analyse the most significant cases, located in the surroundings of Roman cities of Caesaraugusta (Zaragoza), Toletum (Toledo), Augusta Emerita (Mérida) and Olisipo (Lisbon). This review will indicate that it is not possible to establish a physical link between these dams and the aqueducts they supposedly supplied. These findings show the need to adopt a more cautious approach to the archaeological interpretation of these remains. It also shows the need for a joint analysis that brings together data from other fields, helping to clarify these issues.

11 ANCIENT SPRING TUNNELS OF ISRAEL : CHRONOLOGY, TECHNOLOGY, GEOGRAPHY AND CULTURE

Abstract author(s): Yechezkel, Azriel (Tel Aviv University)

Abstract format: Oral

Spring tunnels are ancient, artificial, cavities, common in the mountainous regions of Israel, designated to extract water from underground perched aquifers to the surface. These spring tunnels vary widely in their length (4~300m), source of initiative, and architectural characteristics, thus reflecting the creativity of mountain settlers as they came to find technological solutions for water scarcity.

In this paper, the analysis of a new, comprehensive data base of Israel's spring tunnels phenomenon, containing geographical-physical-and archeological- historical data, will be presented.

To date, 216 spring tunnels were found in Israel, defining it as the densest region in the Mediterranean. Cross analysis of data enabled to offer a technological typology for this water structure, which correlates to the complexity and cultural aspects of the inhabitants of Israel's mountain regions throughout history. In addition, the study proved that spring tunnels were constructed since the Iron Age (~1000 BCE) (till the 20th c. CE), thus they predate similar water structures facilitated in other regions of ancient world. These two observations suggest Israel is the focal point

of this technology. Nonetheless, in Roman Period, this phenomenon reached its peak numerically, technologically and spatially, pointing probably on Imperial hydraulic knowledge transfer processes.

A GIS based analysis of the phenomenon found correlation, throughout the periods, between the intensity and distribution of settlement in Israel's mountainous regions and the number and geographical distribution of spring tunnels.

12 A WONDER OF ENGINEERING: AQUA VIRGO AND ITS FLOW THROUGH TIME

Abstract author(s): Amadasi, Maria Elisa (Sapienza, Università di Roma)

Abstract format: Oral

Aqua Virgo is the oldest Roman aqueduct still functioning in Rome. On one hand, the mainly underground route has assured the continuous activity of the aqueduct, preserving it from the test of time and destruction. On the other hand, the few traces visible on the surface made it difficult to acquire a precise awareness of the aqueduct and its route towards Rome, and hence to represent it in plan.

To this day the general itinerary of Aqua Virgo is known, but a precise and detailed cartography is still absent.

In the past, the few inspections undertaken inside the underground channel aimed to investigate the general state of conservation and to ensure regular maintenance, while the most recent explorations, conducted between 2020 and 2022, aimed to obtain new data about the aqueduct. Modern technologies and more suitable safety measures have facilitated speleo-archaeological investigations in some parts of the underground channel in a way that has previously been deemed unfeasible.

Direct inspections of the underground tunnel have allowed a better understanding of the architectonic features of the specus, also in relation to the geological context, the water intake system, the route towards the Capital, and the diachronic transformations of the aqueduct in connection with the geographical and socio-cultural context.

Detailed reliefs of parts of the underground aqueduct, along with the resort to non-invasive techniques and GIS analysis, made it possible to acquire a better topographical awareness of the aqueduct and update the cartography in use by ACEA Ato2, the water utility company of Rome.

13 LATE ANTIQUE TRANSFORMATIONS IN WATER PROVISION, MANAGEMENT AND DISTRIBUTION IN THE THERMAL BATH ARCHAEOLOGICAL PARK OF BAIÆ (BACOLI - NAPLES)

Abstract author(s): Di Luca, Gioconda (Università degli Studi di Roma „Tor Vergata“)

Abstract format: Oral

The Thermal Baths Archaeological Park of Baiae (Bacoli - Naples) is a large site sits in a very dramatic location. Lying on the slope of the Sella di Baia hill, huge buildings (with pillars, porches, gardens and many water fountains) facing the Lacus Baianus and overlooking the Bay of Puteoli and Mount Vesuvius far away.

Here, for almost five centuries (end 2nd-1st BC – 4th AD), the Roman aristocrats spent their relaxing holidays in the renowned otium of the pusilla Roma, as Baiae was called. Several large domes were raised including bathing systems and many underground structures and their transformations over time are an interesting guideline to better understand the use and the destiny of the main water supply of Campania: the Serino aqueduct (the famous Aqua Augusta built by the Emperor Augustus for the Royal Navy at Misenum). The modifications suffered by the different sectors of the archaeological area are important not only to surface the building phases, but also to have a clearer idea of what happened to the aqueduct in the years: integrating bibliographic data with theoretical insights, closer research methods and procedures of data analysis, my research obtained new results on the history of the Roman aqueduct in Baiae, above all on its Late Antique period. In fact, they will be able to explain well all the different transformations recorded on drainpipes, water tanks with large layers of limestone, wells and rooms turned into cisterns.

14 HYDRAULIC SYSTEMS IN ROMAN THEATRES: THE TRANSFORMATION OF THE THEATRE IN OSTIA

Abstract author(s): Gottardo, Katerina (Durham University)

Abstract format: Oral

It is well-known that Roman amphitheatres could be used for water displays, such as mimic sea-battles or other performances (Coleman 1993). Less considered, however, is the use of theatre buildings for other water spectacles. Gustavo Traversari (1960) was the first to consider this theme closely, hypothesizing a type of performance called the 'tetimimo'; and, more recently, Anne Berlan-Bajard (2006) has extended his work, establishing that such water displays took place well before Late Antiquity. Nonetheless, they remain disputed in nature, lacking proper definition, and, above all, close relation to the archaeological evidence. Evidence for the supply of water to theatres remains altogether neglected.

In the Italian peninsula it has been counted 67 buildings present evidence of hydraulic systems, in most cases related to the sewerage system. Nevertheless, the presence of basins in the orchestra area or the evidence of the use of the orchestra as a pool in theatres demonstrates that these performances were played. An example of the later use of the orchestra as a pool is the theatre of Ostia, dated in A.D. 4th century. At this time, four radial rooms of the cavea and the axial corridor were converted into tanks to store water that was used for filling the orchestra. This theatre is the only example in the entire peninsula. Through the study of the original excavation reports and fieldwork on site, it has been possible to recreate the plan of the hydraulic systems of the theatre. These systems followed changes and additions due to the enlargement of the theatre itself to support the upcoming necessities. The theatre of Ostia is a crucial study for investigating the changes in this type of building from the Age of Augustus till Late Antiquity, not only in terms of structural and engineering needs but also cultural demands.

A. ABELLINUM AND ITS WATER DISTRIBUTION SYSTEM: NEW EVIDENCES FOR A WIDER COMPREHENSION OF THE HYDRAULIC INFRASTRUCTURES

Abstract author(s): Covolan, Marina (Centre Camille Jullian UMR 7299) - Musmeci, Daniela - Santoriello, Alfonso (DISPAC, Università degli Studi di Salerno)

Abstract format: Poster

Situated on the left bank of the Sabato river, the city of Abellinum (Campania region, southern Italy) represents a tangible testimony to the influence of the Roman civilization in Irpinia. The archaeological evidences (e.g. city walls, Forum, baths, a domus, amphitheatre, tombs) are located mostly on and around the Civita hill, where it is also possible to identify some structures connected to the water distribution system of the city.

Abellinum was, and it is still today, served by the Augustan Serino-Beneventum aqueduct. This infrastructure is part of the big Augustan project concerning also the better-known Aqua Augusta Campaniae.

In Abellinum the hydraulic structures already known are a section of the aqueduct and the big natatio of a domus. Latest investigations, carried out by the DISPAC (University of Salerno) within the project Progetto Abellinum. Piano per la conoscenza, la tutela e la valorizzazione dell'antico centro irpino, made possible to increase the knowledge of the distribution solutions adopted in the city.

The discovery of a piezometric tower and of a fountain's element is something yet unpublished. Both evidences are situated in public areas: the former, realized with bricks, is situated along one of the cardines of the town. Meanwhile, the fountain sculpted element has been found at the crossroads with the major decumanus and a cardo. These findings, linked to the already known infrastructures, allow to make a new and wider reflection on the methods of water distribution within the Roman Abellinum.

420 NEVER LET A GOOD CRISIS GO TO WASTE: COLLAPSE, ADAPTATION AND RESILIENCE IN THE CENTRAL MEDITERRANEAN AROUND THE 1200 BC

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Vinci, Giacomo (University of Siena) - Speciale, Claudia (IPHES Catalan Institute for Human Palaeoecology and Social Evolution) - Sabatini, Serena (University of Gotheborg) - Palmisano, Alessio (University of Torino)

Session format: Session with keynote presentation and discussion

The Central Mediterranean represented a key area within the vast and unprecedented exchange network that defines the Mediterranean in the second part of the 2nd mill BC and that apparently ended around 1200 BC. It was recently argued that the 1200 BC was a turning point for many European societies and that the climatic event recorded in this period (3.2 Ka BP) in various parts of Europe triggered important socio-economic changes. In particular, the decades around this year corresponded to a period of dramatic shifts in the Central/North Mediterranean (e.g. abandonment and reorganization of settlement, new forms of social organization), supposedly influenced by environmental change/stress. For instance, a complex range of ecological, economic and social factors has been evoked for the disappearance of the North Italian Terramare Culture or settlements of the Po Plain. However, many other regions deserve the same attention and the hypothesis of an environmental 'crisis' in this area still needs more robust evidence.

To what extent/ the 3.2 Ka BP event – if so – impact on the Central Mediterranean Late Bronze Age communities? Is it possible to detect adaptive responses (social, economic) to environmental changes at regional or lower level? Is it possible to detect short catastrophic events (e.g. frequent flooding, droughts)? Could have changes been induced or amplified by the widespread anthropogenic modifications on the ecosystems documented from around this period, through unsustainable practices (e.g. replacement of species, extensive agriculture, fire activity?).

In this session we address these questions with a multi-proxy approach (including, but not limited to, geo-archaeological, GIS-based and statistical, paleo-ecological, demographic) in order to compare archaeological evidence, land-

scape and environmental changes occurred around 1200 BC with possible shifts in the settlement forms and patterns or economic strategies. Different scale of analysis (site-based, cluster of sites, regional) are very welcomed.

ABSTRACTS

1 OXHIDE INGOTS IN THE CENTRAL MEDITERRANEAN: INNOVATION, ADAPTATION AND RESILIENCE

Abstract author(s): Sabatini, Serena (University of Gothenburg)

Abstract format: Oral

The so called oxhide ingots from the Late Bronze Age are an intriguing class of objects. They have been found all over the Mediterranean and also in continental Europe. Their number, chronology, distribution patterns and puzzling characteristics have been the subject of several studies and variously interpreted. They provide a glimpse into the extraordinary complexity of the Mediterranean and to a certain extent of the European continental world during the 2nd half of the 2nd millennium BCE. Their long *durée* overcoming the 1200 crisis suggests also that the contrast between transformation and resilience affected the Bronze Age 'international' metal trade, but that different forces maintained longstanding traditions even in times of changes. A critical review of the distribution pattern of the oxhide ingots paired up with critical attention to the chronology of the phenomenon invites reflecting on the role of the Central Mediterranean Bronze Age communities as 'mediators' between old and new times.

2 MEDITERRANEAN MOBILITY AND THE 3200 BP TRANSFORMATIVE LANDSCAPE: THE CASE OF PHAISTOS, CENTRAL CRETE

Abstract author(s): Borgna, Elisabetta (Università di Udine -Dipartimento di Studi Umanistici e del Patrimonio Culturale) - Todaro, Simona (Università di Catania - Dipartimento di Scienze Umanistiche)

Abstract format: Oral

The debate on the 3200 BP crisis in the Mediterranean has been approached from different perspectives and in recent decades has been challenged by several environmental researchers, who have highlighted the severe impact of climate factors on population dynamics and societal collapse. This is especially true in the case of Crete, where an intense, even bitter debate has opposed scholars who link the foundation of settlements on high locations to climate change, and scholars who instead explain the resumption of dispersed settlement and the abandonment of the coast-land and lowland as a response to the threat represented by pirates and invaders.

New data deriving from ancient shoreline and geoarchaeological surveys of inland areas have provided new insights into the landscape of "collapse", in particular concerning those lowland sites which apparently did not experience substantial disruption, such as Phaistos in south-central Crete. In the years around 1200 BP the site, while nowadays being at a distance of 5.6 km from the sea, participated in a new maritime koine involving several Aegean harbours, such as Tiryns in the Argolid, and was specifically connected with Central Mediterranean coastal sites, from the Ionian gulf to Sardinia.

By adopting an integrated multi-proxy approach, we argue that the communities that settled the Phaistos hill in certain periods of its long-term occupation had direct access to the sea. More specifically, in this paper we will argue that around 1200 BC, the Phaistos community took advantage of a series of landscape changes. From this perspective we propose to use south-central Crete as a case for readdressing what might have been the major factors that determined the impressive maritime connectivity linking the Aegean to the central Mediterranean regions.

3 BEHOLD, A SWORD! LATE BRONZE AGE SOCIAL CHANGES SEEN THROUGH THE ANALYSIS AND INTERPRETATION OF A "DAGGER" FROM LUCUS FERONIAE

Abstract author(s): d'Ercole, Vincenzo - Bevilacqua, Adriano (Università degli studi di Chieti-Pescara) - Di Giovanni, Andrea (Università degli studi di Roma)

Abstract format: Oral

During the 2011 campaign in the RBA necropolis of Lucus Feroniae a bronze object found in tomb 8 of the necropolis was interpreted as a ,pugnaletto a codolo' (,small-tanged dagger'). Defining this weapon as a ,dagger' is problematic as we can identify two issues:

- RBA Central Italy seems to be characterised by a prohibition regarding the deposition of weapons in tombs, and they are mostly found as votive offerings and in hoards;
- the blade of our "dagger" has parallel margins and a lenticular cross-section, which is not useful for thrusting, but it aligns with contemporary sword types.

One might construe this ‚small dagger‘ as a miniaturistic sword. The miniaturisation of grave goods suggests the development of a complex hierarchical society that could maintain levels of production necessary for organised exchanges and the management of surpluses. Traces of this complexity could be inferred from the analysis of LBA settlements in the Lazio Region, as well as the EIA necropoleis of Latium Vetus. If our ‚small dagger‘ is a miniaturised sword, then it would be the earliest Italian example of miniaturisation in a funerary context.

A second possible interpretation for this “dagger” is an “experimental” weapon: an attempt to shorten a sword which would indicate a change in warfare from the MBA that would result in the short swords used in the FBA and EIA. This theory is supported by traces of blows found not only on this ‚dagger‘ from Lucus Feroniae, but also on the edges of other Bronze Age ‚daggers‘ ranging from the MBA to the FBA, suggesting a slashing use of these weapons. Contextualizing this interpretation with coeval sword types and the resulting military trends of the period we can see how between RBA and FBA the Italian peninsula went through great societal, cultural and economical changes.

4 GEOARCHAEOLOGY OF THE LARGEST PREHISTORIC MOUND IN EUROPE: MULTIDISCIPLINARY INVESTIGATIONS IN THE HILL OF UDINE (NE ITALY)

Abstract author(s): Vinci, Giacomo - Fontana, Alessandro (Department of Geosciences, University of Padova) - Mocchiutti, Andrea (GeoMok s.r.l) - Muscio, Giuseppe - Visentini, Paola (Museo Friulano di Storia Naturale, Comune di Udine) - Bassetti, Michele (Cora Ricerche Archeologiche srl) - Novellino, Massimo (Department of Geosciences, University of Padova) - Musina, Giorgia - Bonomi, Simonetta (Soprintendenza Archeologia, Belle Arti e Paesaggio del Friuli Venezia Giulia)

Abstract format: Oral

According to legend, the hill dominating the city of Udine (NE Italy) was built by Attila the Hun’s soldiers in the 6th century, but its natural or anthropogenic origin has been debated until now. In the framework of a collaboration between Ministry of Culture, Municipality of Udine and University of Padova, five new stratigraphic cores were drilled in 2020-2022 up to 40 m of depth from the hilltop and some new archaeological excavations were carried out.

Geoarchaeological and other multidisciplinary analyses allow to demonstrate that the hill is an anthropogenic mound erected between 1400–1150 BCE and that, later, folklore has transformed the ancestral memory of its origin into legend. The hill, which measures 30 m in height and over 400,000 m³ in volume, had already these dimensions since the its first construction and, thus, it is the largest prehistoric mound in Europe.

The mound consists of alternations of gravelly and soil lenses which seals occupation layers that are radiocarbon dated. Sediments were quarried in the surroundings of the hill and this excavation led to create a depression extending for almost 100,000 m² that was used as a water basin for supplying the settlement. The implementation of this new systems of water management and supply might be tentatively connected to the severe drought occurred in northern Italy at the end of the Bronze Age, as testified in the Po Plain, where a significant drop in the water table is recorded in the last phase of the Terramare cultural group.

Like a few other fortified settlements located in NE Italy, Udine survived the collapse of the Terramare coeval to that of several Eastern Mediterranean societies in the 12th century BCE. This suggests the resilience of the area to the onset of socio-political and/or climatic stresses.

A. CLIMATE CHANGE AND SOCIAL COLLAPSE IN PREHISTORY: A LOST CAUSE?

Abstract author(s): Molloy, Barry (University College Dublin)

Abstract format: Poster

Prehistory is full of turning points. Viewed in long-term perspective, we don’t take issue with these ups and downs. But when we zoom in to interrogate the nature and timing of disruptive events, particularly when framed as crises or collapse, debate is sure to follow. At a basic level this relates to the issue of cause – for rapid social change, we can feel on a firmer footing speaking of multiple interlocking factors operating at different spatial, temporal and social scales to explain how and why societies change. It is wordy and unspecific, but works. The idea of a single, over-arching cause for rapid and exceptional social changes remains anathema. Yet, we repeatedly encounter arguments that climate change was a driver of major collapses around the world, often from outside our specific discipline. These claims have a sensational click-bait aspect which tend to be roundly rejected. We also see an increase in efforts to bring the archaeological record and paleoclimatology together to investigate how past climate conditions can serve as laboratories or exemplars for challenges we face today. Ultimately, the jury is still out on how we can constructively address climate, causation and social change in the same breath without over-simplifying things to make the diverse and often incompatible data and timelines fit.

The resurgent interest in collapse studies provides critical literary context to human-climate relations. Rather than a failure, collapse is increasingly seen as a forced but creative response or adaptation, and despite potential tragedy in the short-term, it relates to resilient aspects of a society. Aiming to avoid environmental determinism, how can we

constructively speak of the thorny issue of causation when social and climate changes correlate in time and place? This paper explores changes in both datasets in southern Europe ca.1200BC with the above challenges in mind.

423 WRITTEN IN STONE: ARCHAEOLOGICAL APPROACHES TO INSCRIBED STONE MONUMENTS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Forsyth, Katherine (University of Glasgow) - White, Nora (Maynooth University) - Gleeson, Patrick (Queens University Belfast)

Session format: Regular session

From its antiquarian origins, the study of inscriptions was long driven by philologists and historians whose primary goal was the extraction of textual data. In recent decades, more 'archaeological' perspectives have been successfully applied to inscribed monuments, addressing new questions and gaining new understandings of the social and cultural context of epigraphic material. These more holistic and theoretically informed approaches include, for instance, consideration of materiality, embodied engagement, object biography, and landscape context (at various scales). Hitherto, technical aspects of field epigraphy and documentation have to a large extent been dominated by the norms of Classical epigraphy, but these have varying degrees of applicability to other epigraphic traditions across the globe, including those which emerged in the non-urban, relatively small-scale societies on the northern and western periphery of the (former) Roman Empire. This is beginning to change as the new field of historical graphematics (the comparative study of historical writing systems) emerges, and initiatives such as the global EpiDocs community diversify the scope of their guidelines and schema to ensure common global standards for documenting epigraphic material in a broad range of scripts using TEI XML. The session provides an opportunity to look comparatively across different epigraphic traditions to examine what archaeology can contribute to the study of inscribed stone monuments. There will be a particular focus on the non-latin writing systems of Celtic Britain, Ireland, and Scandinavia (the ogham and runic alphabets), especially in the period 4th-11th cent CE. However, we welcome contributions from those applying archaeological perspectives to epigraphic material in other regions and from other periods, including non-monumental and portable inscriptions.

ABSTRACTS

1 DIPINTO INSCRIPTIONS FROM THE ISLAMIC WORLD, 7TH-9TH CENTURIES: AN ARCHAEOLOGICAL APPROACH

Abstract author(s): Nol, Hagit (Goethe University Frankfurt)

Abstract format: Oral

According to the narrative sources, Arabs conquered large portions of North Africa and western Asia during the 7th century CE. Then, based on the documentary evidence, an administrative system emerged following the conquests, with Arabic as its main language. Excavations reveal a possible related phenomenon during the 8th and 9th centuries in that region: the use of various surfaces for writing with ink or pigments. This could be found in a very broad region – between Libya and Pakistan. The surfaces include animal bones, fieldstone, or sherds ('ostraca'), bowls and jars, plastered walls, and marble fragments. The languages employed in these texts are Arabic, Coptic, Greek, Aramaic, Syriac, Pahlavi, and Sogdian. The functions of the inscriptions include spells, contracts, debt lists, and writing exercises, among many other. These finds fall between the cracks: often avoided by archaeologists (because they are 'texts'), by historians (because they are 'archaeology'), and even by epigraphers (because they are not carved). The archaeological approach to dipinto inscriptions will be the focus of this talk. That entails the understanding of the physical context of dipinti, their relation to other finds, and the materiality of both surfaces and ink/pigments. Moreover, through mapping, we can learn about the spatial distribution of all finds as well as their spatial absence from the surroundings. This also allows for focusing on changes over time, correlation between different characteristics, and networks. The main objective of this research is understanding the cultural and/or economic reasons for the phenomenon.

2 TEXT AND OBJECT, DATA AND METADATA: USING DIGITAL METHODS AND TOOLS TOWARDS A MORE HOLISTIC APPROACH TO EARLY IRISH EPIGRAPHY

Abstract author(s): White, Nora (Maynooth University)

Abstract format: Oral

This paper will highlight some of the current work on early Irish epigraphy, particularly with regard to archaeological aspects. In addition to employing digital imaging techniques for recording, visualising and analysing inscribed stones

and other objects, projects such as OGHAM (<https://ogham.glasgow.ac.uk>) and EMILI (<https://emili.celt.dias.ie>) are utilising methods from the field of digital epigraphy, which up to recently has been focused on Classical epigraphy. In particular, the use of EpiDoc encoding (a subset of TEI developed for the publication of digital editions of ancient inscriptions) addresses, not only the transcription and editorial treatment of texts as well as palaeographic analysis, but also the history and materiality of the objects on which the texts appear.

Digitisation and digital documentation of this material has resulted in considerable attention and focus on the materiality and visual representation of the inscriptions. Digital methods can also help us to understand and communicate the relationship between text and support material, monument and archaeological landscape, as well as the functions and broader contexts of the inscribed objects. Working in collaboration with archaeologists, our aim is to work towards more interoperable, open and sustainable datasets and digital resources in order to progress interdisciplinary research on inscribed monuments.

3 EXPANDING TEXT, COMPLICATING RE-USE: CITATIONALITY AND TROPE IN PICTISH STONE MONUMENTS

Abstract author(s): Hansen, Daniel (The University of Chicago)

Abstract format: Oral

Pictish symbol stones from first millennium CE northern Britain have long provoked impressions of enigma. With new evidence strengthening the case that the symbols represent linguistic information, this air of mystery has been channeled into decipherment. Yet “meaning” encompasses more than denotation. If we are to understand late antique epigraphy as embedded in, and consequential for, social life, we need to account for the dialectical relationship between the act of inscription and “macro”-social phenomena like identity, temporality and authority.

I posit that archaeology can contribute to such an understanding by attending to notions of “text” not from classical epigraphy but from the research on the semiotics of interaction. This study focuses especially on citationality: the quality of a text that allows it to represent or reproduce another, while reflexively highlighting the act of representation itself. I propose that a study of late antique inscription with respect to the context of its instantiation can illuminate domains of meaning beyond the denotational value of the inscription, especially in cases where the inscribed stone is re-used from some other social context. Are there dimensions of the new context of inscription that point to the act of re-use? Are there typified socially salient genres of re-use, such as imputed continuity, legitimation, or subversion of the original context?

This study investigates the immediate landscape context of a set of Pictish stones that are known or hypothesized to have been re-used from prehistoric social contexts. I incorporate remotely sensed geospatial data and use spatial statistics to determine whether certain variables co-vary with the probability that a stone is re-used. I assess these patterns to infer genres of re-use, or citational tropes. I draw on historical research in Pictland to inform an understanding of the wider social context of identity and politics possibly invoked in these processes.

4 VARIATIONS IN LANDSCAPE CONTEXTS, A COMPARISON BETWEEN OGHAM AND PICTISH SYMBOL STONES

Abstract author(s): Gonzalez Bojaca, Leidy (University of Aberdeen)

Abstract format: Oral

This paper will briefly present the results of an exercise to mass quantify the landscape context of Ogham inscribed stones in Ireland and Pictish Symbol Stones in Scotland. This exercise was done with the goal of testing common/traditional understandings of both monumental traditions and their relationship with adjacent spatial features, to see how widespread and with what intensity these common associations appear under an all-encompassing, quantitative and comparative view.

This required, beyond an up-to-date database of location and content of the inscribed monuments themselves (circa 400 for each region), the grouping of possibly influential geographical and archaeological features, usually mentioned in the relevant scholarship: waterbodies, burial features (cists, cairns and barrows), approximate political boundaries, among others; and the subsequent use of GIS for all spatial analysis, including distance measuring between both, inscribed monuments and landscape features. Distribution analysis was used to search for possible correlations between monument/inscription content and landscape context. Furthermore, by acquiring consistent measurements across all inscribed monuments for both regions, regarding common associated features, grounds for a comparison were set.

As a result of these explorations it will be argued that while both scripts speak of a common phenomenon of the Early Medieval Period in the regions beyond the Roman Empire’s direct influence, both show stark distinctions between each other and in internal localities per region. These internal variations seen in the monuments and their relationship with their immediate and close landscape context speak of their societies’ use of literacy (and its public display) to manage power and land. Despite showing a similar technique of expression, there is a different approach to the mes-

sage and intention in the monuments, hinting at a different relationship of these societies with the land they occupied and the logics of spatial organisation applied.

5 ANCESTRAL LANDSCAPES: THE LANDSCAPE CONTEXT OF OGHAM MONUMENTS IN FUNERARY LANDSCAPES

Abstract author(s): Gleeson, Patrick (Queen's University Belfast)

Abstract format: Oral

This paper explores the landscape setting and wider context of early ogham stones within the corpus from Ireland. The function and role of ogham stones is multifaceted, but a link with burial and ancestral claims to land is often embodied in later textual sources. This link, however, has not always been apparent in the monumentality and landscape setting of ogham stones. Nevertheless, the character of ogham inscriptions suggests that one important dimension of ogham is their commemorative character. In particular, this paper explores the link between inscriptions, landscape, and monumental strategies, embedded in the setting of ogham monuments within larger funerary landscapes. It critically examines the role of these inscriptions as commemorative markers within ancestral landscapes through a range of case studies, including the early stones of Lugnacappul, Co. Kerry. Exploring the monumentality of ogham, it will explore the wider claims to territory and identity inscribed in ancestral places by the combination of ogham and related monuments.

6 NEW WORK ON ULSTER OGHAM STONES

Abstract author(s): Forsyth, Katherine (University of Glasgow)

Abstract format: Oral

The seven ogham-inscribed pillars from Ulster constitute only a tiny fraction (0.02%) of the total number surviving from Ireland. They have received little scholarly attention and have not been previously studied as a group. Yet they provide important evidence for a pivotal period in the north of Ireland's history, particularly when scrutiny is given to their landscape contexts. Though few in number, this group is heterogeneous and widely distributed, ranging geographically from Topped Mountain, Co. Fermanagh, in the west, to Gartree, Co. Antrim and Drumconwell, Co. Armagh in the east; from Aghascrebagh, Co. Tyrone, in the south to Carncome, Co. Antrim and Dunalis, Co. Londonderry in the north. This dispersion, it is argued, is the key to understanding the social position of the people who erected them, and thus about the role of monumentally inscribed texts in the articulation of political power in 5th/6th century Ireland. Hitherto, the oghams of Ulster have tended to be viewed as peripheral to the main ogham phenomenon further south, but when these monuments are placed in a wider context, which encompasses ogham in adjacent parts of Britain and the Isle of Man, a more accurate picture emerges. The result is fresh insight into the origin and spread of the ogham tradition as a whole.

This paper presents the results of a programme of fieldwork and digital recording conducted in 2022 by the author and colleagues Dr Megan Kasten (Glasgow) and Dr Nora White (Maynooth) as part of the AHRC-IRC-funded OG(H)AM project (www.ogham.glasgow.ac.uk).

426 USES OF MATERIAL CULTURE IN VISUAL REPRESENTATIONS OF 20TH AND 21ST CENTURY CONFLICT HERITAGE

Session theme: 3. Heritage Narratives and Representations

Session organisers: Kim, Geonyoung (University of Cambridge) - Lawes, Tonia (University College London) - Zoh, Minjae (Seoul National University)

Session format: Regular session

Conflicts have been a common part of the global stage throughout the 20th and 21st centuries, leaving a visible impression on our material culture. This has become a field of study in archaeology, especially in public archaeology, with many using the discipline to shed light on the unrecorded stories of war and so expanding our narratives of the past. Material culture, and its significance in producing new narratives and reinforcing existing discourse, are of increasing concern to the archaeological and cultural heritage community. Examples include a concentration camp turned into a memorial, trenches reconstructed in museums, or prisoners' uniforms as a motif of a wartime movie. Of course, material culture is not just limited to what can be excavated. Whether it be museum exhibitions on the Cold War, or how the film industry has depicted events in the Second World War, these visual representations both use and become a part of, the material culture of conflict archaeology and heritage. Discussing the various practices in using and creating material culture in visual representations of conflict heritage can lead to a wider understanding of how narratives on the conflict are being produced or reinforced.

This session invites papers that explore visual representations of the material culture of conflicts from the 20th and 21st centuries, to discuss the role of these materials in sustaining and reproducing discourse on conflict. Themes may include, but are not limited to:

- role of material culture in representations of conflicts (e.g., museums, films, and commodification)
- specific aspects of material culture that complement existing narratives or produce new ones
- impact of the uses of material culture in shaping public perceptions of the conflicts
- methodologies in studying visual representations of the material remain of conflicts
- the extent to which representations themselves become a part of material culture

ABSTRACTS

1 PEEPO! ON THE HOME FRONT: CONFLICT ARTEFACTS AS HOUSEHOLD CLUTTER IN A CLASSIC CHILDREN'S PICTURE BOOK

Abstract author(s): Moshenska, Gabriel (University College London, Institute of archaeology)

Abstract format: Oral

PEEPO! by Janet and Allen Ahlberg is a classic of British children's literature: a picture book with holes cut in the pages, through which the toddler protagonist can peek into the next page, to see what the family is up to. First published in 1981, PEEPO! has entertained generations of readers, some of whom notice the clues - some subtle, some less so - that the story takes place during the Second World War.

In this paper I propose to analyse the use of Second World War British Home Front material culture such as gas masks, ration books, military uniforms, and bomb-sites in PEEPO! as part of a rich material world invoked in the images. Alongside the 'war objects', Janet Ahlberg used a copy of 'The Army and Navy Stores Catalogue, 1939-1940' to populate the fictional home with period-appropriate furnishings and household goods.

My analysis will look at the use of both of these categories of objects alongside domestic space and family-members in the visual storytelling of PEEPO!, and reflect on the importance (or otherwise) of conflict settings in British children's literature.

2 THE DARK SIDE OF RECEPTION AND MISUSES OF CLASSICAL ANTIQUITY WITHIN THE GERMAN ARMY 1933-1945

Abstract author(s): Hansen, Søren (Museum Lolland-Falster)

Abstract format: Oral

The use of Classical antiquity in Nazi propaganda and the German army during WW2 was a significant aspect of Nazi ideology and their attempt to legitimize their rule and increase recruitment. The Nazi regime saw itself as the heir to the Roman Empire, and this idea was reflected in many aspects of the German army, including symbols, and uniforms.

"Cultural appropriation" was used by Hitler and his propaganda ministry to create an image of a superior German race, rooted in Classical antiquity, and to give the German army a sense of historical legitimacy. The Nazi regime selectively picked elements of ancient Roman and Greek cultures while ignoring aspects that did not fit.

Reception Studies provide a useful framework for analyzing how Classical antiquity was used and appropriated by the Nazi regime. Focus is placed on the background and historical context and the reasons why ancient Rome and Nazi Germany recruited from foreign cultures, how the Nazis viewed Classical antiquity, and regarded themselves as a continuation of the Roman Empire.

In addition to the Roman Empire, the Nazi regime also saw the ancient Spartan warriors as a model for the German army. The idea of a militarized society, with strict discipline and a focus on physical strength, was seen as a desirable attribute. This idea was reflected in the training and education of the German soldiers, as well as in the propaganda aimed at the German people.

The use of Classical antiquity in Nazi propaganda and the German army during WW2 was a significant aspect of the Nazi ideology. They had an eclectic use of antiquity from where they chose suitable elements and created a false narrative and myth of the Classical past. This phenomenon seems to be important also in modern conflicts.

3 WAX WARS - RESHAPING THE MATERIAL CULTURE OF WWI IN HUNGARY

Abstract author(s): Kocsis, Andrea (Northeastern University London; University of Cambridge)

Abstract format: Oral

“If the gloves don’t fit” - you must sew new ones. This paper analyses how the Hungarian Centenary WWI exhibition, *A New World Was Born*, mimicked the use of material culture to redefine the historical narrative of WWI. It also examines the impact of using pseudo-material culture on shaping public perceptions of the War.

This curatorial practice helped express the four main narrative pillars of the exhibition. The first theme evokes the image of a pre-WWI Carpathian Basin without territorial claims or ethnic conflicts, where peace was broken only by the outbreak of the War. The second one elaborates on how the Allied powers triggered WWI and considers the Central Powers as victims of the Western aggressors. The third theme relativises WWI by reducing it to a Fraternal War, and the final one blames the tragedy of the conflict on left-wing governments.

These themes are twisting historical objectivity by providing grounding soil for myths beneficial for contemporary political discourses. This paper discusses how these themes are expressed with the help of pseudo-material culture in the exhibition space through installations and storytelling. It also analyses how the exhibited themes nurture the mnemonic conflict between the strengthening Hungarian nationalism and the representation of the European Union in a populist political climate.

Overall, this paper provides a case study which gives a thorough insight into how the museological choice of using commissioned installations at the expense of authentic material culture promoted the stakeholders’ interpretations of the past in a populist setting by rewriting the traditional reference points of history and bringing new memory constellations to life.

4 PUBLIC MEMORY, VISUAL (RE)PRESENTATION AND THE MATERIAL LEGACIES OF THE NIGERIA-BIAFRA WAR (1967-1970)

Abstract author(s): Onyemechalu, Stanley (University of Cambridge)

Abstract format: Oral

Wars, like other forms of violent conflict, cause destructive impacts on the heritage of affected communities. They also leave behind enduring footprints that transform the heritage landscape, including material culture, memorial sites, and monuments. However, because destruction is an obvious impact of wars, many studies in the conflict-heritage and contemporary archaeology literatures have overlooked their (re)generative impacts. That is, little is known (or taught) about how violent conflicts and their legacies also cause the creation/revival of heritage or become heritage themselves. In this paper, I share a part of my PhD research which explores the complex relationship between heritage and the legacies of violent conflicts among the Igbo people in the context of the Nigeria-Biafra war (1967-1970) – one of the largest armed conflicts that marked the early years of Africa’s post-colonial era. Since 1970, successive Nigerian governments have tried to stifle its war history and memorialisation. Ironically, this spurred (or coincided with) increasing people-led efforts to ‘salvage the situation’ through visual representations, resulting in dissonant narratives, distortion of historical events and the weaponization of heritage by parochial interest groups. Combining ethnographic fieldwork, site visits and documentary research, I discuss the material culture generated from the war as visually (re)presented in the government-run National War Museum, Umuahia and the community-run Centre for Memories, Enugu. I investigate how the latter tries to counter the representational problems in the former. I also discuss how this war, 53 years after, continues to be (re)presented/memorialised via movies, literary works, private exhibition centres, digital archives and other artistic interventions. Drawing on contemporary archaeology and conflict-heritage concepts, I explore not only the conflicting socio-political interpretations of these visual representations today but also their role in the teaching of the less-talked about civil war history in Nigeria.

5 RECONSTRUCTION AND MEMORY: THE ROLE OF MATERIAL AND VISUAL CULTURE IN LEBANESE CONFLICT NARRATIVES

Abstract author(s): Krikorian, Danielle (University of Birmingham)

Abstract format: Oral

The Lebanese Civil War (1975-1990) was a fifteen-year long conflict that destroyed Lebanon’s fragile national identity and societal landscape. Instrumental origins of the war were regional volatility, the colonial past, and sectarian divides. Militias fought for power to attain economic and political control of the country (Heinz, 2008). Cultural sites were looted, and archaeological excavations were halted. Beirut was split into West Beirut and East Beirut. The National Museum was on the Green Line (the demarcation line) and became an extremely perilous place in a city filled with violence. The collection was endangered and the museum endured bombs with snipers and militias taking over (Wright, 2016). The collection was saved by archaeologist Maurice Chehab, the director of the Directorate General of Antiquities (DGA), and his wife Olga Chehab (Kadi, 2015). Yet, in the aftermath of the civil war, a collective amne-

sia ensued. The heads of militias who had fought during the war became heads of government and censorship followed (Shaery, 2012). In fear of reigniting the recent horrors, silence was enforced. Amidst this amnesia, reconstruction of Beirut and the National Museum took place. In 1999, the Museum reopened its doors and parts of the collection were reinstated and displayed (McGivern, 2016). In this perspective, how does (and can) the archaeological Museum's material and visual collection and restoration remember the war and fight against collective amnesia? The research argues the importance of material and visual culture as methods of historical preservations of memory. It will explore the archaeological collection and the strategy of its curatorial display in fighting against collective amnesia to restore a sense of national identity. The importance of material heritage and visual culture in conflict narratives against war brutality will be at the centre of the research.

6 MATERIALITIES AND MEMORIES OF THE SPANISH CIVIL WAR: A DIGITAL HUMANITIES-BASED APPROACH TO THE NARRATIVES OF BILBAO'S IRON BELT

Abstract author(s): González Cantera, Tania (Institute for Historical Research - IRH - Universitat de Girona) - Rubio-Campillo, Xavier (Departament de Didàctiques Aplicades - Universitat de Barcelona; Institut d'Arqueologia - Universitat de Barcelona; School of History, Classics & Archaeology - University of Edinburgh)

Abstract format: Oral

Historical narratives linked to war heritage are generated and curated by public institutions, forging an official interpretation which does not necessarily have to coincide with the ones generated by individual or non-official collectives. The archaeological record is a key component of this complex heritage since it acts as a repository, where the same materiality may generate a diversity of memories (hegemonic/counter-hegemonic, resilient/subaltern). The complexity of conflict landscapes requires an approach that takes into account the spatial, archaeological and heritage aspects.

The Spanish Civil War is an excellent example of the complexity of narratives generated by contemporary conflict heritage. In the Basque country, the strong identity of the region has generated a unique and distinct perspective on the Spanish Civil War which has been translated into the memorialising process of the conflict's heritage.

This work confronts the narratives generated by the mythic Iron Belt: a line of Republican fortifications that defended Bilbao from the Francoists in 1937. This WWI imitation structure was designed to create a solid fortification around Bilbao to make the Biscayan capital an impregnable redoubt for Franco's troops. A key propaganda tool since the war, nowadays the Iron Belt has become a myth within the Basque imaginary and one of the main targets of the government's memorial policy.

Specifically, we have analysed 4 sections of the Iron Belt representative of the diverse dynamics of present-day memorialization. Our aim is to discover differences in terms of research, management, and memorialising processes. To explore these questions, we have focused on the geospatial and temporal dynamics. In this context, local entities and associations play a leading role: there are deep differences in the discourse depending on the socio-political, economic and cultural background of each municipality.

7 RIGHT PLACE, RIGHT TIME? QUESTIONABLE RECONSTRUCTIONS OF 20TH CENTURY FORTIFICATIONS IN FINLAND

Abstract author(s): Kauhanen, Riku (University of Turku)

Abstract format: Oral

After WW II several fortified areas in Finland were restored as mementos to past conflicts. Sometimes these sites are restored by professionals in museum field, and sometimes local communities did the work.

This representation studies examples from Finland: A WW I era fortified site and WW II site in Northern Finland which was used by local communist resistance. Local understanding had heavy impact on how these sites were seen, restored, and used to represent history.

In these cases the authenticity of places was not the main goal of restoration works, but they strongly reflected the message of community that wanted them restored. In WW I site the area was restored into a World War Two fortification.

In the second case, even though a member of resistance was the one who took initiative of restoration, the result was deliberately a tourist attraction and a memorial site rather than restoration of the original site. The site was for example visited in 1980s by communist Pioneer movements summer camp; in this case the place and its meaning was explained as mixture of then popular peace movement and local communist history. This local experience and interpretation was then produced to reflect Finnish history as whole, and the place was used as "solid proof" of these interpretations of the past.

Results are a mix of original place and the intentions and experiences of local communities. Cases highlight how the place can be "right" and people strongly associated with actual war time can produce a reconstruction with outcomes

and interpretations, that might make professionals in archaeology, history and museums raise their eyebrows. These reconstructions are still not only mementoes of the time they were supposed to represent: When contextualized, these representations further reflect attitudes towards the past and changes in them: a conflicted history of conflicts.

8 INTERPRETING CONFLICT HERITAGE: SEMIOTIC LANDSCAPES OF LEXICAL AND VISUAL TEXTS AT IMPERIAL JAPANESE CONFLICT HERITAGE SITES

Abstract author(s): Moxham, Oliver (University of Cambridge)

Abstract format: Oral

Are we all reading the same discourse when we visit conflict heritage sites? Do overseas visitors who identify with its history have the same access as domestic visitors? How does this affect interpretation of discourses at conflict heritage sites?

In answering these questions, I argue that difficult elements of conflict discourses can effectively be hidden from stakeholders through selective translation. This paper is based on research conducted at heritage sites in Kyoto, Japan relating to the Asia-Pacific War (1931-45) and the colonization of Asian territories by the Japanese empire, such as the monolingual space of Ryōzen Gokoku Shrine and the multilingual space of Ryōzen Kannon. Based on textual analysis of tourist literature in English and Japanese, as well as ethnographic interviews with English and Japanese language community members, I will present tangible evidence of the impact of the language barrier on interpretation of conflict heritage sites.

I intend to bring together notions of heritage performance (Smith 2020) with the sensitivities of conflict translation (Baker 2018, Giblin 2022) through the perspective of semiotic landscapes (Thurlow & Jaworski 2010). I explore how the historical discourses stakeholders bring with them to conflict heritage sites interact with the discourses made available for them by the site management. This includes lexical texts such as signage, but also visual texts which transcend language. For example, at Ryōzen Gokoku, texts are all in Japanese yet kamikaze statues and maps of occupied territories are internationally recognisable. I assess what meanings monolingual stakeholders draw from site imagery and how accessing textual discourse affects their understanding of the site. In addressing lack of linguistic representation, I draw upon theories of translational justice (De Schutter 2017, Meylaerts 2011) which argue for equal linguistic representation of stakeholders. This can be a means of generating constructive, intercultural dialogue between stakeholders of past conflict.

427 RESHAPING MEDIEVAL DESERTION IN EUROPE: BEYOND THE LATE MEDIEVAL CRISIS PARADIGM

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Quirós Castillo, Juan Antonio (University of the Basque Country; University College London) - Holata, Lukáš (University of South Bohemia)

Session format: Regular session

This session aims to discuss new perspectives on the abandonment of rural settlements and small towns in medieval Europe, which draw on theoretical frameworks concerning the Anthropocene, resilience, connectivity, mobility, social complexity, multiscale analysis, comparisons, human ecology, ecosystems, environmental changes, and landscapes.

In large parts of Europe, the very beginnings of medieval archaeology are associated with the investigation of deserted villages. These sites were considered ‘field laboratories’ for studying domestic social life, as well as the impact of the late medieval crisis. In the last decades, however, this issue has been overlooked in the wake of the expansion of other topics addressed by postclassical archaeologies. The phenomenon of settlement abandonment has thus remained under theorised, with frequent cataclysmic hypotheses and deterministic interpretations being advanced. Most of the existing conclusions do not reflect recent reassessments of rural communities, which increasingly emphasise their active and strategic role.

Finally, a vast number of deserted sites have been discovered due to the boom in development-led archaeology. In parallel, methodological advances, new procedures, and a wide range of geoarchaeological, palaeoenvironmental, and remote sensing data, have opened up new avenues for studying topics such as village origins, social dominance, and environmental and landscape change. Nevertheless, the abandonment processes have not returned to being the major area of study.

The ultimate goal of the session is to produce a collective book that brings together innovative and rigorous papers which revisit the question of settlement desertion in medieval Europe. For this reason, we do not request case studies, surveys, or descriptive reports. Instead, we expect holistic, multi-scale, and interdisciplinary approaches with cutting-edge contextual or scientific analyses, which should reveal the driving forces behind abandonment, shed

light on the interrelationships between various agents and systems, and thus enhance our understanding of medieval landscape dynamics.

ABSTRACTS

1 PATTERNS OF ABANDONMENT IN MEDIEVAL SMALL TOWNS: EVIDENCE FROM LATER MEDIEVAL ENGLAND

Abstract author(s): Morton, Benjamin - Jervis, Ben (Cardiff University)

Abstract format: Oral

During the 14th-15th centuries it is common for archaeologists and historians to identify periods of urban 'decline' or 'decay', suggested by the abandonment of plots or larger areas of urban landscapes. Whilst it is rare for towns to be completely abandoned, the inhabited area, and by extension the population, of many towns fell considerably. This process of abandonment and decline is commonly linked to the impact of the Black Death, resultant economic turmoil and the impacts of climatic fluctuation on agrarian production but needs to be situated more centrally within the wider re-orientation of settlement landscapes, economy and society in the later Middle Ages.

Whilst methods such as town plan analysis have proved useful in understanding the development of the urban landscape (for example identifying evidence of urban planning), our understanding of processes of abandonment and re-development are less advanced. Here, drawing on English evidence, we outline some models of urban abandonment, setting these into their wider context to begin to draw out some of the underlying factors determining how and why townscapes changed in this period. In doing so, we go on to critically examine the concept of abandonment itself, to assess its utility in the analysis of changing landscapes which, whilst not inhabited, continued to find uses as spaces for agriculture, commerce and productive activities. This comparative understanding of urban experiences will take us beyond a general picture of decline, decay and abandonment to understand the complexity and variability of lived experience in this period.

2 MEDIEVAL SETTLEMENT FORMS: EVIDENCE, LANDSCAPE DYNAMICS, AND ABANDONMENT PHENOMENON IN LATIUM REGION (ITALY)

Abstract author(s): Bernardi, Martina (Roma Tre University)

Abstract format: Oral

The 'incastellamento' phenomenon starting between the Early and the Late Middle Ages strongly defined the rural and mountainous landscape of many Mediterranean areas, with the construction of fortified settlements located at the highest point of the mountain reliefs, with the aim to dominate the territory around and enclose peasantry inside walls, both to control and to protect them. The castle-system in many cases ended in a few centuries, and in the Italian context mainly around the 14th-15th century, for historical, social, and geographical reasons related to the context in which the abandonments happen.

But other settlement forms characterized the anthropogenic environment in the age of the incastellamento, as both written and archaeological data indicate, such as open villages, little farms, or scattered houses.

This paper will analyse the medieval landscape of Latium Region and some case studies, with a specific focus on the reasons behind the abandonment phenomenon. In addition, how the landscape changed with the end of castle-system, and which settlement forms survived until the modern era (and why).

3 BEYOND ABANDONMENT: AN INTERDISCIPLINARY STUDY OF MEDIEVAL AGRICULTURE, ENVIRONMENTAL DEGRADATION AND HUMAN ADAPTABILITY IN THE CZECH REPUBLIC

Abstract author(s): Holata, Lukáš (University of South Bohemia)

Abstract format: Oral

Medieval rural communities in Central Europe have long been considered to be victims of environmental instability, leading to the abandonment of settlements. However, these claims are often based on assumptions rather than hard evidence. Our interdisciplinary project challenges this conventional wisdom by combining archaeology, geology, and ecology to provide a comprehensive picture of medieval land use and its impact on the environment.

Using cutting-edge technologies like lidar and geospatial analysis, together with environmental data, a holistic, landscape-scale analysis of four deserted villages in the Czech Republic have been undertaken. By taking advantage of the extensive forests that have preserved the remnants of the medieval landscape, including fields and micro-relief in their hinterlands, we are able to shed light on the long-term ecological effects of medieval agriculture. Preliminary research outcomes demonstrate the considerable impact of medieval land use in terms of erosion hazard. At the same time, however, there is growing evidence of the resilience of medieval rural communities that were able to utilize en-

vironments that we now consider unsuitable. By moving beyond the simplistic view of abandonment, our project provides a new understanding of the interplay between human culture and the environment in the medieval rural milieu.

4 RESILIENCE AND VULNERABILITY IN THE LATE MIDDLE AGES! HOW CAN WE STUDY ADAPTIVE CAPACITIES – AND AVOID ANACHRONISM?

Abstract author(s): Svensson, Eva (Risk- and environmental Studies, ISK-department) - Pettersson, Susanne (Independent) - Johansson, Annie (County Administrative Board, Värmland)

Abstract format: Oral

The late middle ages was a challenging time; plague, climate change, sometimes war, social and power structures under negotiations – and other problems. But changing times also include possibilities, and it is often put forward that those who survived got a better life after the upheavals of the late medieval agrarian crisis. When trying to pinpoint success factors regarding peasants and peasant communities, there is often a focus on skills and adaptive capacities. Such peasant communities are considered resilient, whereas the unsuccessful ones are regarded as vulnerable. The concepts resilience and vulnerability are frequently used in today's sustainability discourses, and we archaeologists are diligently borrowing from those discourses while interpreting our archaeological data. In today's sustainability discourses resilience is characterised by diversity, redundancy, modularity, reserves, social capital, agency, inclusiveness, tight feedbacks and innovation. In line with this, it is common among archaeologists to forward high degree of community equality, diverse, innovative and adaptive economies, elaborated networks and successful resistance to elite actors and power structures as key qualities of resilient peasant communities. Archaeologists are here not only applying concepts and understandings of today on the past, but also politicising the past as being sustainable / resilient in desirable ways. Vulnerability is less studied, or theorised, and often reduced to meaning poverty and impuissance.

In this presentation we will elaborate on the concept of vulnerability in relation to rural settlement desertion, with special focus on unevenness and powerstructures within peasant communities. We will also problematise the concept of resilience as being normative, and show that some characteristics of resilience meant resilience for some peasants and settlements and vulnerability for others.

5 A MULTIDISCIPLINARY AND GEOSPATIAL INVESTIGATION INTO THE PROBLEM OF SETTLEMENT DESERTION IN CENTRAL HUNGARY

Abstract author(s): Ferenczi, Laszlo (Univerzita Karlova) - Rác, Tibor Ákos (Ferenczy Museum Centre)

Abstract format: Oral

Studying a digital database of late medieval settlements covering the total area of medieval Hungary (Engel 2001), we apply topologic and distance based parametric models to address the problem of settlement desertion in connection to both internal and external, as well as long- and short-term factors (i.e. socio-economic changes in the 14th-15th centuries and the impact of the Ottoman conquest in the early 16th century). The results of a quantitative spatial statistical assessment of socio-economic data from textual sources (tax registers) will be presented, in combination with the study of long-term environmental processes based on a comprehensive evaluation of pollen sites (Törőcsik-Sümegi 2019). This will be complemented with the quantitative study of a large inventory of archaeological finds, from field-surveys, excavations and systematic metal detecting surveys conducted on a micro-regional level in County Pest, in the central parts of the country (Füredi-Rác 2021). Focusing on this area and more broadly on the Great Hungarian Plain, where settlement desertion – catalyzed both by climate change (Ferenczi et al 2020) and the Ottoman war – seem to have made a lasting ecological and socio-economic impact, the presentation will underline the necessity of a multi-scale approach to evaluating/interpreting different data types (historical, environmental, archaeological), and advocate for a more nuanced view of the desertion process, in the face of the difficulties implied by weaving together different data, and with regard to the problem of settlement hierarchies, internal migration, settlement relocation (Pinke et al 2016), or the differences between land desertion and settlement desertion (Kiss 2019), as well as between temporary and permanent desertion phenomena.

References

- Ferenczi et al 2018: <https://www.researchgate.net/publication/325058726>
- Füredi-Rác 2021: "Archaeological topography of the Ócsa landscape protection area from the Hungarian Conquest to the end of the Middle Ages." <https://www.academia.edu/80171536>
- Kiss 2019: <https://www.researchgate.net/publication/343254468>
- Pinke et al 2016: <https://www.researchgate.net/publication/295395374>
- Törőcsik-Sümegi 2019: <https://www.researchgate.net/publication/343416075>

6 DESERTING VILLAGES AND THE END OF THE “SETTLEMENT PARADIGM” IN THE LIGHT OF NORTHERN IBERIA EXPERIENCE

Abstract author(s): Quirós Castillo, Juan Antonio (University of the Basque Country; University College London)

Abstract format: Oral

In this paper, it is argued that Deserted Medieval Village studies need a deep conceptual, methodological, and theoretical reassessment in order to meet a more comprehensive understanding of rural societies and landscapes. The emergence of rural medieval archaeology in Southern Europe has been based on the study of settlement patterns, hierarchies, morphologies, and desertions. Great Narratives such as Late Medieval crisis, Village formation, or the Incastellamento process have produced, in the last quarter of the 20th century, a “settlement paradigm”, which has been very influential in the study of medieval societies. However, the explosion of rescue archaeology, the implementation of the Archaeological Sciences, and the replacement of the site analysis with a landscape approach have changed rural archaeology in different ways. An unexpected outcome of these developments has been the abandonment of the desertion processes studies, considering them a “natural” dynamic or minor research topic.

Conversely, the study of desertions, considering a new conceptual toolbox, could shed light not only on causality and economic trends but also on core topics such as villages, communities, resilience, and multiple agencies. Taking into consideration some case studies from Northern Iberia, the paper proposes to 1) implement a “relational paradigm” in order to overcome the shortcuts of the “settlement paradigm”, 2) discuss the “crisis” perspectives considering the complexity of the desertion processes, and 3) introduce new avenues for the study of rural landscapes in long diachronic terms.

429 STORIES FOR SALE. THE NARRATIVES OF HERITAGE IN MASS CONSUMPTION

Session theme: 3. Heritage Narratives and Representations

Session organisers: Lin, Shiting - Lyu, Junting (University of Cambridge; Cambridge Heritage Research Centre) - Liu, Si (École supérieure d'art et design Le Havre-Rouen)

Session format: Regular session

The many nuances of stories of heritage in mass consumption, the questions they raise about storytelling and the influences of various forms of mass consumption on heritage narratives sit behind this session proposal. These aspects are obvious, yet rarely discussed. Heritage, the one that is considered to be preserved well, connects more closely to mass consumption in recent years. Our work on the Neolithic culture ‘Yangshao culture’ (China) has made us realise that heritage can be consumed by large amounts of people nowadays through visiting archaeological parks and even buying fast-moving commercial goods tagged with the name of heritage, leading to various narratives spreading in public. The research on narratives of heritage in mass consumption is often underdeveloped but important. For example, the dynamics in the interaction between heritage stories in business and those in museums – do the former correspond with or diverge from the latter? Or are the stories for sale made up? How does commercial storytelling supplement or undermine that in heritage sites? Nor have we paid enough attention to various forms of mass consumption of heritage, especially those heritage narratives (re)presented and consumed in places beyond museums and heritage sites (i.e. shops, VR displays, films and archaeogamings). Scant attention to these aspects means that we may have ignored some major factors that influenced the public’s understanding of the past. It also means that we have neglected the impacts of mass consumption of heritage on political, cultural, and social dimensions. We call for critical discussions on these issues in the mass consumption of heritage. In turn, we also aim to recognise more of the stakeholders (communities, businesses, institutions, etc) who create and consume those heritage narratives.

ABSTRACTS

1 EXIT THROUGH THE GIFTSHOP: A HIERARCHY OF VALUE IN MUSEUM GIFTSHOPS

Abstract author(s): Austin, Summer (University College London)

Abstract format: Oral

The context that museums and heritage sites display their collections form powerful personal connections, dramatic narratives and enhance the objects as visual commodities; this results in visitors departing with a mental picture of what is valuable and thus desirable. Increasingly, museum gift shop displays emulate exhibition displays; they are less kitschy and more refined, further blurring the boundaries between cultural heritage and cultural commodity. While the exhibition itself constitutes a product to be ‘sold’, the exhibits grand finale is the gift shop with a wide range of merchandise on sale, where objects for looking at are replaced by objects for buying. Gift shops server to extend the narrative and extends the experience the audience undergoes within the exhibition. Just as objects displayed within a

museum achieve an elevated level of authenticity and prestige, souvenirs from and inspired by museums also achieve 'museum quality' status; however, not all souvenirs are equal.

Building off Alsop's 1982 theory of a 'hierarchy of value', this paper proposes a 'hierarchy of souvenirs'; where each level appeals to various visitors (socioeconomical, age, etc); serves distinctive functions (educational, fun, prestige, etc) and symbolises different levels of perceived authenticity and value. From logoed items that are relatable, often kitschy, inane, and iconic; through thoughtfully curated boutique souvenirs; progressing to high-end replicas, limited edition, gallery-quality pieces that serve as stand-ins for the real thing. The pinnacle of all souvenirs is the real thing, these souvenirs allow the owner to literally own their own artefact, their very own piece of heritage.

This hierarchy of souvenirs gives us a framework to consider motivations, profiles, and narratives of those who engage with museum gift shops and how storytelling and commodification of cultural heritage from knickknacks into replicas reinforce the materiality of cultural heritage and normalises demand for the genuine artefact.

2 ANCIENT ARCHITECTURE FOR SALE. THE RELATIONSHIP BETWEEN ARCHAEOLOGICAL AUTHENTICITY AND THE FORMATION OF COLLECTOR NARRATIVES IN 19TH-CENTURY GRAND TOUR SOUVENIRS

Abstract author(s): Petreková, Eliška (Masaryk university)

Abstract format: Oral

The phenomenon of mass consumption has gone far beyond the last few years. At the turn of the 18th and 19th centuries, the Grand Tour impacted collector culture, when collectors routinely brought back souvenirs of important sites and monuments from their travels. Market quickly responded to collector demand and offered a plethora of copies of ancient antiquities of varying quality, size, and material to suit the tastes and finances of the collector. A specific group of Grand Tour souvenirs was models of ancient architecture, for which another important factor was also apparent. It was the relationship to the archaeological sites, and therefore the level of their authenticity, which significantly influenced the shape of the story of ancient heritage.

A wide range of such architectural models is represented in the collection of the Austrian Chancellor Metternich's collection at the Czech castle of Kynžvart. His set is unique because it contains a variety of objects, in terms of materials used and different levels of documentary function and archaeological authenticity. Two distinct different perspectives have influenced their final form, the first being purely scientific, pragmatic, and based on the actual condition of the monuments. The second is more idealized, narrative, and based on artistic imagination and contemporary ideas. This study aims to explore the different representations of models of ancient architecture in Chancellor Metternich's collection and, based on this analysis, to interpret the different ways of narrating cultural and historical heritage.

3 FROM BELIEF CEREMONY TO FESTIVAL CELEBRATION: THE HISTORICAL CHANGES OF FISHERMEN'S SACRIFICE TO THE SEA IN RONGCHENG, SHANDONG

Abstract author(s): Zheng, Yan (Shandong Academy of Social Sciences; University of Cambridge) - Zhang, Wei (Shandong Academy of Social Sciences)

Abstract format: Oral

In order to further promote the protection and inheritance of ritual and festival NRMs in China, we undertook the project „Research on the Protection System of Ritual and Festival NRMs“ (2018) commissioned by the Department of NRMs of the Ministry of Culture and Tourism. This paper is a case study and research based on the project's needs. Through literature collection and fieldwork, this paper discovers the inheritance and development mechanism of Rongcheng Yuankuang Fishermen's Sacrifice to the Sea from the personal narratives and life histories of the non-genetic inheritance subjects. It presents the interaction between its inheritance status, economic transformation and tourism strategy. First of all, the rituals of the Yuankuang Fishermen's Sea Festival are passed down and protected by the Yuankuang Village Committee and the Yuankuang Industrial Group, which are united as village enterprises, with the former secretary of the village committee as the representative inheritor and the elites of the village as the leaders. Secondly, with the significant changes in the original production and lifestyle of Yuankuang village, the villagers have changed their production and occupation. The ritual's original faith narrative has gradually faded to inherit it better. Finally, after the upgrading of the Rongcheng Fishermen's Sea Festival to the International Fishermen's Festival, it has been given new content, such as attracting foreign merchants to participate in the fishermen's market trade, holding a grand joint exhibition of intangible cultural heritage and cross-strait dragon culture exchange meetings. As the inheritance and protection unit of national intangible cultural heritage projects, Yuankuang Industrial Group has been involved in the catering and hotel industries in developing and utilising marine resources and products and in the initial attempts of marine cultural tourism.

4 HERITAGE AND HISTORY NARRATIVE IN VIDEO GAME MEDIA: PENTIMENT, A CASE STUDY

Abstract author(s): Caloi, Luca (University of Sassari)

Abstract format: Oral

The mass consumption of heritage and history narrative has increased in the popular culture market, in particular through the video game media. Despite this interest, the accuracy of the reconstruction of the environment has not always proven to be of the highest quality.

The aim of this research is to evaluate this aspect in a specific case study: Pentiment, by Obsidian Entertainment. This game stands out for its graphics inspired by the imagery of medieval miniature manuscripts, its narrative and historical contextualisation.

This analysis is going to examine in detail the principal components of the game: its main themes, its level of reconstruction, its historical reliability, and the presence of didactic components.

The narrative is set in a fictional village of the 16th century Bavaria and follows the action of an illuminator apprentice. Despite the fictional narration, the historical reconstruction of this product is at a very high level.

The relation between the community and their past is an important issue dealt in the game. In the last act of the game the player will have to choose which parts of the local history are more valuable to be recorded for the future generations and which one should be discarded.

To conclude, the didactic aspect is represented by numerous notes that allow anyone to follow the events of the game more precisely and can be real insights into unknown historical elements.

All these elements construct a very immersive narrative that conduct the player through the life in a complex period: the transition between medieval and early modern age. It shows how a little community of that age is trying to understand its identity in a context in which the elements of a previous history are still visible and also traditions of an even older legacy are strong.

5 INTANGIBLE HERITAGE AND HISTORICAL NARRATIVES IN HANFU: THE CASE OF HANFU TOURIST SERVICE IN THE DATANG EVERBRIGHT CITY OF XI'AN

Abstract author(s): Lyu, Junting - Lin, Shiting (University of Cambridge; Cambridge Heritage Research Centre)

Abstract format: Oral

The mass consumption of Hanfu, the traditional clothes of the Chinese Han ethnicity, and the historical narratives behind the clothes have been given increasing attention in recent years in China. Hanfu is no longer a niche interest or an attire for special occasions, but a noteworthy trend among a growing number of young people. Despite the fashionable and entertaining features of Hanfu, its gradually deeper integration with tourism and its implications for symbolising cultural identities are quite intriguing in the current society of China. This research aims to find out how the historical narratives behind Hanfu are created and promoted to the public. In other words, as material representations of intangible heritage, how particular heritage discourses are constructed through the processes of design and promotion of Hanfu. In turn, how do consumers perceive and incorporate particular narratives? By looking into the case of the Hanfu tourist service in the Datang Everbright City of Xi'an, this research hopes to offer more insights into this special popular cultural phenomenon and the dynamics between the local and national identities and heritage behind it.

6 GENSHIN IMPACT AND IMPACT OF GENSHIN: A CASE STUDY OF VIDEO GAMES AS VEHICLES FOR CULTURAL HERITAGE

Abstract author(s): Zhang, Lingran (Ohio State University)

Abstract format: Oral

Few would argue that video games are one of the most popular leisure activities. With enjoyable and educational characteristics, video games can foster enjoyment of many core aspects of life, including those related to cultural heritage access recently. In 2020, a cultural phenomenon swept through the world with the debut of Genshin Impact (GI). This Chinese-made, action role-playing videogame has not only enraptured the imaginations of its 50 million players but has also promoted the recognition of intangible cultural heritage (ICH) internationally.

Utilizing GI as a case study, this article analyzes the utilization and potential exploitation of cultural heritage through its mass consumption by a global audience in the medium of video games. It considers how this game demonstrates an effective method of introducing people to and engaging people with the safeguarding of ICH, specifically the Beijing opera.

GI introduced a new character, Yunjin, in January 2022, who plays the role of an opera practitioner. To familiarize players with this character, GI has designed a storyline for Yunjin, inviting players to embark on an adventure with her.

The entire journey is transformed into the lyrics of a piece of Beijing Opera that Yunjin performs at the end. Players can easily understand the music and relate its content to the plots they have just experienced in the game.

Beijing Opera, like many other ICH practices, faces difficulties in safeguarding due to its decreasing relevance with contemporary society. GI presents this ancient practice in an immersive narrative that is accessible and relatable to modern audiences, stimulating heated discussions about ICH on social media. The article also discusses the responsibilities of game developers when incorporating heritage into video games.

437 CURRENT RESEARCH IN THE AMERICAS [EAA4AM]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Saintenoy, Thibault (Incipit-CSiC; ArchAm, Université des Antilles) - Hattori, Marcia (Incipit-CSiC) - Ziolkowski, Mariusz (University of Warsaw)

Session format: Session with presentation of 6 slides in 6 minutes

Organised by the EAA4Am Community, this session aims to creating a welcoming space for archaeologists participating in the 2023 annual meeting, and interested in introducing and sharing results of ongoing research on the archaeology and heritage of the Americas. Despite the long trajectory of research in the Americas by scholars based in European institutions, few spaces dedicated to Americanist archaeology exist in European archaeological meetings. This session aims to overcome this by sharing information on ongoing projects as well as providing insights about our research practices.

We welcome contributions that present archaeological and heritage research on the Americas from all time periods, and which adopt a variety of theoretical and methodological perspectives, including interdisciplinary and reflexive approaches (alterity, coloniality, gender, resistance, heritage production and conflict, amongst others). The goal of the session is not only networking, but also to generate debates about the possibilities, limitations, and perspectives of practicing Americanist research while based in Europe.

The organising team also contains Carolina Orsini (Museo delle culture di Milano) and Alexander Geurds (University of Oxford).

ABSTRACTS

1 NATIVE AMERICAN CULTURAL HERITAGE IN THE CANYONS OF THE ANCIENTS NATIONAL MONUMENT (COLORADO, USA): DIGITAL DOCUMENTATION, MANAGEMENT, AND PRESERVATION

Abstract author(s): Palonka, Radoslaw (Institute of Archaeology Jagiellonian University; Crow Canyon Archaeological Center)

Abstract format: Oral

The paper is focusing on presenting the newest results of investigations, analysis, and protection of Native American sites located in two distinct areas within the Canyons of the Ancients National Monument, in the heart of the Mesa Verde region, southwestern Colorado (USA). These sites comprise pre-Hispanic Ancestral Pueblo settlements with sandstone architecture and rock art as well as historic Ute (and also possibly Navajo) petroglyphs and Euro-American historical inscriptions. The research includes a combination of traditional archaeological methods with strong emphasis on modern digital techniques such as advanced digital photography, close-range and UAV/drone photogrammetry, 3D laser scanning, and GIS spatial analyses. It led to the documentation of approximately forty Ancestral Pueblo sites and socio-cultural, chronological, and demographic estimates and inter-relationships reconstructions between settlements and the role of defensive architecture in response to the environmental and social changes. The project also recorded previously unknown large rock art sites in the second research area resulting in analysis, digitization, reconstruction, and visualization of the last 2000 years of cultural and settlement changes, migrations, and the interaction between humans and the environment in this area.

The research has been conducted since 2011 by the Sand Canyon-Castle Rock Community Archaeological Project, a research project led by the Department of New World Archaeology, Institute of Archaeology, Jagiellonian University in Kraków (Poland). This is the example of the very few European projects in the field of archaeology conducted in North America. This research include also solid collaboration with Native Americans, mainly from the Hopi Cultural Preservation Office, Hopi tribe, Arizona (as well as other tribes) and several American institutions, including Canyons of the Ancients National Monument/US Bureau of Land Management and Crow Canyon Archaeological Center (both from Colorado) and scholars from various US universities, including the University of Arizona, Tucson or Maryland Institute College of Art.

2 ARCHAEOLOGICAL PROSPECTION IN A NEIGHBORHOOD IN THE CENTER OF TEOTIHUACAN (MEXICO)

Abstract author(s): Pecci, Alessandra (Universitat de Barcelona) - Moragas, Natalia (ERAAUB, IAUB, Universitat de Barcelona) - Barba, Luis - Ortiz, Agustin - Blancas, Jorge (LPA, IIA, UNAM)

Abstract format: Oral

We present here an update of an interdisciplinary project to study a neighborhood in the center of Teotihuacan (Mexico), started in 2017 in co direction between the UNAM (A. Ortiz, L. Barba) and the Universitat de Barcelona (A. Pecci, N. Moragas).

The project is aimed at investigating an area located in the center of Teotihuacan (The City of Gods), Mexico, between the river San Juan, the Sun Pyramid and the Street of the Dead, named by Millon “sectors N2E1 and N2E2”, through the application of geophysical prospection techniques (georadar, electrical and magnetic studies), topography, aerial photography with drone, the study of chemical residues on the surface and the registration of archaeological materials to identify structures and indicators of human activity. The data obtained until now in selected portions of the two sectors, are compared to the map proposed by Millon in 1973 and allow to suggest preliminary hypotheses about the presence of buildings, their distribution and depth and the relationship of this area with the San Juan River.

The project is financed by the Spanish Ministerio de Cultura y Deporte (Ayudas a proyectos arqueológicos en el exterior and the Fundación Palarq, and it is part of the activities of the Laboratorio de Prospección Arqueológica of the UNAM, the Institut d'Arqueologia of the University of Barcelona and the ERAAUB research group (2021 SGR 00696) of the University of Barcelona.

3 POTTERY CONTENTS IN POSTCLASSIC XOCHIMILCO, MEXICO

Abstract author(s): Hernández-Grajales, Meztli (Universitat de Barcelona, ERAAUB, Instituto de Arqueología UB) - Barba, Luis (Laboratorio de Prospección Arqueológica. Instituto de Investigaciones Antropológicas, UNAM) - García-Granero, Juan José (HUMANE-IMF-CSIC) - Mileto, Simona (Universitat de Barcelona, ERAAUB, Instituto de Arqueología UB) - Ortiz-Butrón, Agustín (Laboratorio de Prospección Arqueológica. Instituto de Investigaciones Antropológicas, UNAM) - Mejía-Appel, Gabriela - Castillo Mangas, María Teresa (Dirección de Salvamento Arqueológico, INAH) - Pecci, Alessandra (Universitat de Barcelona, ERAAUB, Instituto de Arqueología UB)

Abstract format: Oral

Food is a basic human need that has become a social, economic, political, and religious activity present in the daily life of all cultures throughout history.

In Mexico, food is, to date, a very strong element of national identity with its prehispanic features as one of the main characteristics; this is one of the reasons why it was named part of UNESCO's World Heritage.

The Spaniard chroniclers recorded a lot of information regarding the food of the Mexica festivals, as well as those dishes consumed by the elites. But what did common people eat in pre-Hispanic times, and which was the use of different pottery shapes?

To meet the objectives of this research, the contents in different archaeological ceramic shapes for food preparation and consumption were analyzed. A multi-proxy approach was applied, and pottery samples were studied with spot tests, gas chromatography coupled with mass spectrometry; and were studied to identify the presence of starch granules. Finally, some of these samples were also analyzed with FT-IR to confirm the presence of lime likely associated with nixtamalization.

The results show evidence of the possible preparation of nixtamalized corn, as well as the presence of residues of mainly vegetable origin. In addition, it is possible to observe that the results obtained for the different ceramic forms do not always confirm the hypotheses about the function that have traditionally been assigned to them, which confirms the importance of integrate different analytical approaches. for a better interpretation of use-function of ceramics and food in the past.

The study is part of the PhD project of M. Hernández financed by CONACYT-FONCA, the Institut d'Arqueologia of the University of Barcelona, the ERAAUB research group (2021 SGR 00696), the Laboratorio de Prospección Arqueológica de la UNAM and the HUMANE- IMF- CSIC research group.

4 NEW RESEARCH INTO THE ANCIENT MAYA OF NORTHWEST BELIZE

Abstract author(s): Neuhoff-Malorzo, Patricia (University of Texas at Austin; SWCA)

Abstract format: Oral

Current research being undertaken to investigate the activities and sites of the ancient Maya of NW Belize has begun to incorporate both new methods and practical field components in order to look at and compare new datasets with existing data in a novel way. This is accomplished by comparing and contrasting a variety of aspects of a selection of

urban and hinterland settlements within this specific area of the Three Rivers Region. Recent efforts are combining magnetometry with existing data to investigate sites across northwest Belize. These efforts have led to new and more complete analysis of creation of space at three locations within the Rio Bravo Conservation and Management Area conducted under the research umbrella of the Programme for Belize Archaeology Project. This research has also led to new theoretical approaches to the analysis of settlements and settlement interactions in this region analyzing the positions and contributions from such sites as La Milpa (the main center for the region) and Tzak Naab.

5 RESEARCH ON THE HIDDEN ARCHITECTURE OF LA BLANCA ACROPOLIS

Abstract author(s): Munoz Cosme, Gaspar (Universitat Politècnica de València) - Vidal Lorenzo, Cristina (Universitat de València)

Abstract format: Oral

Fifteen years of research at the archaeological site of La Blanca, located in the Mopán River Valley (Petén, Guatemala), have offered many insights into its urban structure and the society that occupied it both during its period of splendour and after its abandonment. The implementation of new digital technologies at all stages of archaeological excavation during fieldwork has provided useful advantages when undertaking the exploration of the buildings buried inside the Acropolis by the ancient Maya, especially on its western flank.

The application of this innovative method, together with a meticulous excavation methodology, led to the discovery of an original substructure comprising a building with three vaulted rooms and vestiges of mural paintings, next to another one built on an elevated platform bearing a notable frieze made by small carved pieces fitted together.

The study of the characteristics of these architectural spaces and of the splendid frieze led us to reflect on the cultural links of this area of Petén with other regions of the Maya area, where later similar architectural practices have been documented.

The aim of this paper is to share the results of our methodology and research on Maya archaeology while based in Europe, and to generate a debate on the linkages and influences of architectural techniques witnessed in Petén with those of other regions (especially of Northern Yucatán where we are currently doing research), and to explore the possible vectors of cultural transmission between these regions.

6 THE GEOARCHAEOLOGICAL INVESTIGATIONS IN TAK'ALIK AB'AJ, RETALHULEU, GUATEMALA

Abstract author(s): Gilewski, Michal (Uniwersytet Warszawski) - Schieber de Lavarreda, Christa - Flores, Victor - Espigares, Carlos - Medina, Miguel - Aleman, Aldo (Parque Arqueológico Nacional Tak'alik Ab'aj - PANTA, Ministerio de Cultura y Deportes de Guatemala/Viceministerio y Dirección General del Patrimonio Cultural y Natural-Dirección Técnica IDAEH) - Oglaza, Kajetan - Przychodzeń, Karol - Woronko, Barbara (University of Warsaw)

Abstract format: Oral

The project Investigaciones Geoarqueológicas en Tak'alik Ab'aj (realized in cooperation with the Tak'alik Ab'aj National Archaeological Park and the University of Warsaw) have carried out the geochemical studies of sediments from excavations and auger sondages within the Central Group and North Group. The aim of the study is to reconstruct the form of land use and to reconstruct the function of these areas, as well as to corroborate the existence of residential areas and units, and potential cultivation zones, identified by means of frequency or absence of evidence of garbage pits in previous excavations. For this purpose, an analysis of the content of soil organic matter by the Loss-on-ignition (LOI) method and the geochemical study of soil in different strata were carried out.

The study of the strata carried out in the peripheral areas showed higher and more varied values of loss-on-ignition (LOI) than those in the central area. These data, among other geoarchaeological results, seem to confirm the first hypotheses coming from the traditional excavations.

7 EARLY PLANT DOMESTICATION AND FABRIC TECHNOLOGIES: THE CASE OF SOUTH AMERICA'S COTTON (GOSSYPIMUM BARBADENSE)

Abstract author(s): Alday, Camila (University of Cambridge) - Beresford-jones, David (McDonald Institute for archaeological research, Cambridge)

Abstract format: Oral

G. barbadense, indigenous to South America's tropical lowlands has an unparalleled legacy for the story of modern textile industries and fishing economies worldwide; yet long before being largely cultivated around the world, *G. barbadense* had first become a critical textile material – and likely cultivated 6301–6133 cal. yrs. BP among coastal hunter-gatherers on the Pacific coast. Researchers have long hypothesised about the critical role of cotton in the development of the early subsistence strategies of South America's coastal communities. For instance, Moseley's maritime foundation model (1975) epitomised the idea that cotton and gourds were the basis from which complex technologies were produced (e.g., large-scale fishing nets), and the existing maritime economy was enhanced.

In our research, we conduct a review of archaeological and botanical evidence for cotton domestication in South America. To do so, we compile data from molecular genetics of *Gossypium* (Westengen et al. 2005; Grover et al. 2022; Viot and Wendel 2023), to Stephens and Moseley's seminal works (Stephens 1975, Stephens, and Moseley 1973), Damp and Pearsall's (1994) archaeobotanical analysis and Piperno's model (2011) on plant cultivation and domestication in the Americas.

We critically analyse the compiled evidence to show how cotton cultivation triggered a turning point in the social dynamics of coastal hunter-gatherers by causing a shift from an immediate-return (e.g., wild-gathered plants) to a delayed-return (e.g., sown, watered, and harvested *G. barbadense*) economy. In doing so, we emphasize how relevant cotton cultivation was for the formation of large-scale communities motivating further social cohesion and wider economic links among hunter-gatherer groups on the Pacific coast. Finally, we argue that cotton – as a textile crop, is a unique example to interrogate the link between textile technologies and the concept of 'complexity' among the early coastal communities of South America.

8 MANUFACTURE, USE AND VALUE OF GOLD AMONG THE MUISCA (AD 400-1600): THE CASE OF NUEVA ESPERANZA (COLOMBIA)

Abstract author(s): Benzonelli, Agnese (University of Cambridge) - Rivas Estrada, Sebastián (Corporación universitaria minuto de dios) - Otero Santillan, Joaquín - Calderon Rodriguez, Gabriel Armando (INGETEC) - Campos Quintero, Lina (Museo del Oro) - Crawford, Rosie - Martínón-Torres, Marcos (University of Cambridge)

Abstract format: Oral

Nueva Esperanza (AD 400-1400) is widely recognised as one of the most important Muisca archaeological sites of Colombia, and the most extensively excavated settlement. This site includes more than 3400 burials as well as domestic and ritual contexts, and the extensive material culture recovered comprises pottery, goldwork, lithics, and numerous spindle whorls. This site is therefore a key study focus of the REVERSEACTION project (www.reverseaction.org), which focuses on complex and luxury technologies in stateless societies.

Here we present the analytical study of more than 200 gold objects recovered from the site, using OM, pXRF, LA-ICP-MS and isotopic analysis. Anchored in contextual associations and an extensive set of radiocarbon dates, the results allow an understanding of the provision, manufacture, use and deposition of goldwork. Through a formal evaluation of technical complexity and depositional contexts of the artefacts, we discuss the possible co-existence of technical traditions, collective action, and the social value of gold.

By integrating the goldwork analysis with the information available on the associated individuals (osteoarchoeology and aDNA) and contexts, as well as data from other crafts, we explore diachronic changes in raw materials and technology, craft organisation and social inequality. This work not only enhances our understanding of Nueva Esperanza, but it also provides a solid reference point for research on similar materials in museum collections where contexts are less clear.

9 INTERDISCIPLINARY STUDY OF THE USE OF ANIMALS AT THE SITE OF PACHACAMAC, PERU (10TH-16TH CENTURIES AD)

Abstract author(s): Erauw, Céline (University of Cambridge)

Abstract format: Oral

This paper reports the use of animals at the site of Pachacamac, a major site on the central Peruvian coast (5th-16th centuries AD), according to three themes: their use in the diet, in rituals and offerings to the deceased.

To answer this, a corpus of 30,479 archaeofaunal remains, never studied before, has been analysed. The remains come from 21 buildings and areas excavated during ten excavation campaigns of the Ychsma Project (Université libre de Bruxelles) between 1999 and 2019. This faunal material was approached from three complementary angles: zooarchaeology, which underlies most of the research work, archaeology and the study of complementary sources (ethnohistorical, iconographic and ethnographic).

Zooarchaeological analysis carried out shows a constancy during the successive phases of occupation. Concerning diet, the animals consumed were mainly guinea pigs and domestic camelids. This diet is supplemented by the consumption of various wild taxa. In terms of ritual use, four categories of offerings were distinguished: foundation, abandonment, cult and funerary offerings. Domestic taxa (camelid, dog and guinea pig) dominate the assemblage of archaeofaunal remains found in these contexts. Wild taxa, some of which are not endemic to the central coast, are also used as offerings, but to a lesser extent. If globally, the exploitation, both domestic and ritual, of animals at the Pachacamac site from the 10th to the 16th century presents many similarities with the practices found at other sites, this study leads us to consider that certain aspects give the Pachacamac site a singularity that certainly deserves to be studied further.

10 STABLE ISOTOPE STUDY OF THE DIET AND MOBILITY OF INCA CAPACOCCHA VICTIMS

Abstract author(s): Socha, Dagmara (Center for Andean Studies, University of Warsaw) - Fernandes, Ricardo (Systems Archaeology, Max Planck Institute of Geoanthropology; Computational Archaeology Lab, Max Planck Institute of Geoanthropology; Radiocarbon Lab, Max Planck Institute of Geoanthropology; Compound Specific Isotopic Analyses Lab, Max Planck Institute of Geoanthropology; Faculty of Arts, Masaryk University; Climate Change and History Research Initiative, Princeton University)

Abstract format: Oral

The Capacocha ritual was of great importance in the Inca Empire and involved the sacrifice of children and young women who were selected from the provincial elite based on their beauty and health. These victims were gathered from across the Empire and brought to the capital, Cusco, in order to be sacrificed during important events associated with the royal court, natural disasters (e.g. earthquakes, droughts, volcanoes, and epidemics), and cyclical holidays (e.g. summer and winter solstices).

This paper presents the findings of a stable isotope analysis of the diet and mobility (as indicated by carbon $\delta^{13}\text{C}$ and nitrogen $\delta^{15}\text{N}$ isotope ratios) of teeth and bones from thirteen individuals sacrificed at Ampato, Pichu Picchu, and Misti volcanos. These remains were discovered by a team led by Johan Reinhard and Jose Antonio Chavez in the 1990s. Isotopic analysis of the tooth enamel revealed that the children had mixed origins, while examination of the bone and teeth of the victims from Misti showed that the diet of some of them had changed in the two years prior to their death. This suggests that the children may have been taken from their place of origin to Cusco as hostages or acclimated long before they were sacrificed.

11 MUYU MUYU - THE INCA ORACLE OF SOLIMANA?

Abstract author(s): Klaput, Jan (University of Warsaw) - Presbítero Rodríguez, Gonzalo (Universidad Católica de Santa María en Arequipa) - Ziółkowski, Mariusz (University of Warsaw)

Abstract format: Oral

The presentation will outline the latest results of Polish-Peruvian excavations at the Muyu Muyu site (dep. Arequipa, Peru). The site, located on the slopes of the Solimana volcano, can probably be identified as the Inca ceremonial centre, known from written accounts, associated with worship of Solimana and as the oracle speaking on behalf of the sacred peak. Chronicler Cristóbal de Albornoz mentioned that the sanctuary was rebuilt by the Incas and given a service of a group of mitimaes (settlers displaced from other parts of the Inca empire). This kind of statement suggests the existence of some earlier administrative-ceremonial center in Muyu Muyu, which was probably later adapted by the Incas for their needs.

Following the archaeological prospection carried out at Muyu Muyu in 2017, the Center for Andean Studies of the University of Warsaw, together with the Universidad Católica de Santa María in Arequipa, organised the first season of excavations in 2022. The project involved a series of survey digs, the main objective of which was to document the stratigraphy of the different parts of the site, providing information on its chronology and use. A documentation of the architecture in Muyu Muyu was also carried out, including several unusual structures. Further plans involve, among others, radiocarbon dating of samples collected in various contexts within the site. The project aims to provide answers to questions about the original function of Muyu Muyu, its identification as a major Solimana worship centre, and the presence of pre-Inca activity at the site, indicated by the account of Albornoz.

12 INVESTIGATING SPANISH COLONIAL IMPACT: AN UNDERSTANDING OF TECHNOLOGICAL CHANGE THROUGH CERAMICS FROM SOUTH AND CENTRAL AMERICA (1400-1700 AD)

Abstract author(s): Thompson, Helen (University of Sheffield) - Day, Peter (Institute of Nanoscience and Nanotechnology, NCSR 'Demokritos'; University of Sheffield) - Buxeda i Garrigós, Jaume (University of Barcelona) - Jackson, Caroline (University of Sheffield) - Linero Baroni, Mirta (Patronato Panamá Viejo) - Prieto-Olavarría, Cristina (Centro Científico Tecnológico - CCT - CONICET, Mendoza; Universidad Nacional de Cuyo) - Cocco, Gabriel (Museo Etnográfico y Colonial) - Urbina, Simón (Universidad Austral de Chile) - Chiavazza, Horacio (Universidad Nacional de Cuyo)

Abstract format: Oral

Spanish colonisation of the so-called 'New World' had significant impacts on Indigenous populations, African slaves, and the lives of Spanish settlers. In this project, Spanish colonial impacts will be considered through the study of technological transformations in ceramics and comparative provenance studies across four sites during the 15th-17th centuries. The main sites under investigation are Panamá Viejo (Panama), Mendoza and Santa Fe la Vieja (Argentina), and Valdivia (Chile). There are two key questions under consideration in this paper: 1) Did technological transfer occur between Indigenous and Spanish ceramic traditions and, if so, by what mechanisms? And 2) How were ceramic technologies and patterns of consumption influenced by the process of colonisation, and what can that tell us

about colonial and Indigenous identities in South and Central America? These questions will be addressed through the characterisation and comparison of the production technology of both Indigenous and Spanish ceramic traditions. This characterisation will be approached by examining ceramics from pre and post-Spanish arrival with macroscopic analysis, ceramic petrography, and X-ray fluorescence. The technological insights produced will inform important academic debates on colonialism and understandings of material conditions of contact, control and resistance involving Indigenous groups which have current global relevance.

438 **TIMBER BUILDINGS IN MEDIEVAL AND POST-MEDIEVAL EUROPE**

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Bouwmeester, Jeroen (Cultural Heritage Agency of the Netherlands) - Patrick, Laura (Queen's University Belfast) - Berryman, Duncan (Centre for Community Archaeology, Queen's University Belfast) - Kerr, Sarah (Aarhus University) - Gullbrandsson, Robin (Västergötlands museum)

Session format: Regular session

The general image of medieval buildings is that they were mostly made of stone in urban contexts and of wood on the countryside. This might be based on a nineteenth century romantic vision of rural life in contrast with the urban. The reality was far more complex. Not only could stone be found in farm buildings, equally wood was, despite fire hazards, for a long time a very popular building material in towns. More often a mixture of building materials occurred.

This led to growing demand for wood, in particular from the 12th century when urbanisation increased sharply. Local wood was no longer sufficient to meet the demand and it became necessary to import wood.

So timber construction in the Middle Ages had many dimensions. In this session we would like to explore and discuss these in more detail. Possible themes for discussion include:

- the development of wooden buildings in the Middle Ages;
- the materiality of wood as a building material in context of (for example) status and class;
- the use of wood as building material;
- the exchange of building techniques;
- the trade in wood and the import of wood;
- conserving / maintaining wooden monuments especially in light of increasing pressures from the climate crisis and tourism;
- new methods and techniques in researching wooden buildings.

We welcome contributions with a focus on medieval and post-medieval Europe.

ABSTRACTS

1 **DENDROCHRONOLOGY IN CHURCHES OF VÄSTERGÖTLAND - A VIEW ON TIMBER RESOURCES AND THEIR USE THROUGH TIME**

Abstract author(s): Gullbrandsson, Robin (Västergötland's Museum) - Hansson, Anton (Department of Geology, University of Lund)

Abstract format: Oral

Since the 1980s, several medieval churches in the West Swedish province of Västergötland have been sampled for dendrochronological analysis. In an ongoing cross-disciplinary project at the University of Lund and Västergötland's Museum, almost 400 archived samples from around 30 churches are digitized where data and metadata are made accessible through the database SEAD. The digitized material is used to discuss medieval church building in the province, which timber resources that were at hand and how they were used, focusing on roof structures and belfries. Questions are asked on felling dates, provenances, character of forests, timber qualities, provision and scantling. The project seek to reflect how these things changed over time, from the early 12th century until the Late Middle Ages and the Early Modern Period. The early constructions indicate access to local natural forests with slow-grown straight pines and oaks of large diameter, suitable for cleaving forth high quality rafters, struts, boards and shingles. Early dendrochronological results indicate that oak timber during this time is mostly focused to two areas with suitable oak resources, whereas pine timber seem to be accessible throughout the province. After the intense church building of the 12th century, timbers of high quality seem to have become harder to obtain. This is supported by preliminary dendrochronological results indicating a single area of oak forest supplying the churches in the province. However, a real shortage of construction timber in parts of the province is apparent first in Early Modern time.

2 MEDIEVAL CHURCHES OF WOOD AND STONE - RECONSIDERING CHURCH TOPOGRAPHIES AND BUILDING MATERIALITY STATUS IN NORWAY

Abstract author(s): Rein fjord, Kristian (University of Bergen)

Abstract format: Oral

Wood was the common building material in Norway during the Middle Ages. Both in rural and urban contexts timber buildings dominated built environments. For instance, only 271 of around 1200 churches of the period were built in stone. Even though stone building was introduced as a new technology to the region in the early 12th century, wood building continued throughout the medieval period, in ecclesiastical and secular contexts. Stave churches, wooden halls and timber lofts hold a significant value in Norwegian architectural history and heritage discourses. Being the largest building group of both wood and stone, churches should be starting point of material status enquiries. A scholarly consensus has been that stone churches held a higher status than stave churches and were more prestigious in rural medieval topographies, as stone churches presumably were more expensive to build. Reassessing the evidence of finance (tax protocols and church property income), architecture, and raw material resources (quarries and forestry), the proposed paper argues that the high status of stone in church topographies should be downplayed. It is stated that patrons did not consider finances when choosing raw materials. Other factors, such as raw material resources and socio-political strategies, were of essence when choosing wood or stone in medieval Norway.

3 THE WOODEN TOWN OF LÖDÖSE

Abstract author(s): Lazarides, Anton (Lödöse museum)

Abstract format: Oral

The medieval town of Lödöse in western Sweden was a wooden town. The absence of stone buildings is a rather curious subject, perhaps suitable for another session. This paper will address the topic of the many wooden buildings in Lödöse. The focus will be on the development of building techniques through time as well as creating a better understanding of how the town looked. Were there only small one-storey buildings or could there have been larger wooden structures with several storeys as well?

During the 12th and 13th centuries most buildings were built with post-and-plank technique - with corner posts and horizontal plank infill. The foundation for a building of this technique was usually a few corner stones or just wooden sills. During the end of the 13th century, log construction became more common and was eventually the predominant building technique in Lödöse. From the late medieval times, very few wooden structures have been found due to the poor preservation in the uppermost layers in the archaeological stratigraphy. Instead, we find simple stone sill foundations, usually in rows with just one layer of stone in rectangular shapes.

During the last few years, older excavation plans and documentation have gradually been digitally scanned to easier access the results of these projects. A first attempt to digitally reconstruct parts of the town by georeferencing these plans into GIS has been made. This process has brought light upon the general layout of the town and how it has changed through time.

4 TIMBER BUILDINGS IN EARLY MEDIEVAL TRONDHEIM, NORWAY - TYPES, TECHNIQUES AND DEVELOPMENT AND RESOURCES INVESTED IN THE BUILT ENVIRONMENT

Abstract author(s): Petersen, Anna (Norwegian Institute of Cultural Heritage Research) - Brevik, Per Steinar (Stiklestad National Culture Centre)

Abstract format: Oral

Timber buildings form a substantial part of the built environment in medieval Scandinavia, both in rural and urban contexts. Because of often favorable preservation conditions for organic material in urban contexts, architectural remains are often encountered in the excavated archaeological material from Norway's medieval towns. The past building heritage can be reconstructed using archaeological sources, cultural-historical information and expertise found in traditional timber craftsmanship. Analyses of the volume of timber utilised in buildings in urban contexts, and the types and development of construction techniques used are important factors to be considered in discussions of what an urban economy in medieval Norway consisted of. However, timber as a natural resource is seldom included in studies of urban medieval economy from an archaeological perspective. This presentation uses the secular wooden architecture in early medieval Trondheim (AD 950-1150) as a case to illustrate timber's role as an economic resource, and highlights aspects of the socioeconomic organisation the early urban Trondheim retrieved from remains of the secular wooden architecture regarding access to timber, volumes of timber used, and types of labour and skills employed.

5 THE CONSTRUCTION OF WOODEN HOUSES WITHIN A PLOT IN THE TOWN OF LUND, FROM THE LATE 900S UNTIL THE 1300S

Abstract author(s): Gardelin, Gunilla (Kulturen)

Abstract format: Oral

In the central parts of the medieval town of Lund, the conditions for the preservation of organic material are very good. This means that remains of wooden buildings, both sacral and profane, have been documented during archaeological excavations.

Previous studies of the building culture of Lund were made at a general level, and references are repeatedly made to these generalizations about building culture. The generalizations mostly concern what building techniques were used and when changes to the building culture took place. Why changes took place and how construction work was organized in Lund have only been touched upon on a hypothetical level. This implies that there may be a greater variety of building construction techniques than previously assumed.

The project aims to highlight new knowledge about the medieval wooden buildings of Lund, both in sacral and profane environments. What have building conditions and technology looked like in disparate environments and during different periods?

Of the remains preserved underground, only certain building elements remain. To facilitate the identification of building construction techniques, reconstruction will be used as a method. In the reconstruction process, a decision must be taken on which building technical solutions has been possible. In such a process, interpretations of the found remains can be improved.

This presentation includes a case study dealing with wooden buildings on a plot in Lund, that was archaeologically excavated in 1979-80. The building elements underwent dendrochronological analysis, which makes this particular plot suitable for further studies. The case study will form the basis for a more comprehensive study of the wooden buildings of Lund. In further studies, the hope is also to be able to gain a better understanding of how the wooden building craft was organized during the Middle Ages in Lund.

6 TIMBER-FRAMING IN LATE MEDIEVAL FLEMISH CITIES. AN ARCHAEOLOGICAL AND BUILDING HISTORICAL APPROACH TO URBAN HOUSING

Abstract author(s): Lapeere, Lennert (Ghent University)

Abstract format: Oral

The late medieval Flemish cities were amongst the most populated in western Europe and had a dense urban fabric. Iconographic sources, such as the cityscapes on the Ghent Altarpiece (finished in 1432), show that a substantial part of the townhouses was built using timber-framing techniques. Unlike these iconographic sources, building historical and archaeological data were initially scarce and difficult to interpret. New archaeological research of the last decades combined with building historical analysis made it possible to present a first overview of timber-framed townhouses between ca. 1200 and 1500 in the study area, including present-day French Flanders (Northern France), the provinces of West and East Flanders (Belgium) and Zeeland (Netherlands).

An overview of all used foundation techniques shows a clear shift from earthfast post construction to stone building and timber-framed structures on sill walls or padstones. Building historical analysis of the interior wooden structure of preserved stone townhouses of Bruges and Ghent proves the importance of wood in late medieval structures. The existing wooden house fronts are carefully made and were no cheap alternative of complete stone houses but status symbols on their own.

The analysis of all excavated medieval houses of the medium-sized city of Aalst shows the use of different materials and building techniques in between urban quarters and its evolution through time. These data compared with other excavated sites in Ninove, Ronse, Sluis, Ypres, and Douai gives an evolution of the appearance, building materials, and layout of urban housing but also about plot layout and orientation to the existing urban infrastructure. Some regional differences became apparent in the use of materials and construction techniques.

7 BEHIND THE CURVE: A 13TH CENTURY TIMBER BUILDING IN ASTURIAS, SPAIN

Abstract author(s): Fernández Fernández, Jesús (University of Oviedo) - Moshenska, Gabriel (University College London)

Abstract format: Oral

The study of early medieval timber buildings in Spain has benefitted mainly from the results of rescue archaeology in recent decades and also some academic projects. However, the research of later medieval houses – particularly rural and peasant homes – has lagged behind. In Asturias, as in some other regions, there is virtually no archaeological evidence of early or late medieval rural vernacular architecture. This paper presents the results of an excavation that

recovered the complete floorplan of a timber peasant house dated to the 13th century. The rectangular structure consisted of twenty postholes outlining an area of around 33 square metres, containing trash pits and hearths. We also collected abundant animal bones and other environmental evidence from the site. The house is extremely simple in structure and layout, and the associated artefacts are equally simple and sparse: this is in marked contrast to many contemporary buildings excavated in other parts of Europe. Stone was in widespread use for peasant houses in Italy from the 12th century, and in England and Wales a century later. The findings of our excavation indicate that Asturias was behind the curve in these matters: stone buildings and other evidence (such as the use of coins, and pottery found in market sites) appear gradually from the 14th century onwards. At this point in time we find an intensification in agrarian work, a growing frequency of coin finds, and the presence of non local pottery. Our research on this house and its surroundings offer valuable insights into the variations in the archaeological record of high-medieval peasant houses in Europe.

8 LOG BUILDINGS AND THE CRAFTSMAN'S POINT OF VIEW. WOOD, TECHNIQUES, SKILLS AND TOOLS IN ARCHAEOLOGICAL TIMBER FROM EARLY MEDIEVAL TRONDHEIM.

Abstract author(s): Brevik, Per Steinar - Johansen, Kai (Stiklestad National Culture Centre)

Abstract format: Oral

Archaeological deposits in anaerobic conditions preserves wood and other organic materials for a long period of time. This makes it possible to study both tool marks, decorative elements and construction techniques at a detailed level and is as such an invaluable source to our understanding of for instance log building practice and tool usage. Tool marks and traces of different techniques and processes, as well as the type, volume and quality of timber, adds crucial information of building capacity and the skills of carpentry found in the early urban communities. However, accessing this information from said sources, presupposes a deep knowledge not only of archaeology, but also of historical craftsmanship.

This paper will focus on the early medieval town of Trondheim, Norway. The archeological source material includes various remains of wooden buildings from the early urban settlement from the 11th century. Using this material as the point of departure, the goal is to show how introducing the perspective of historical craftsmanship in addition to traditional archeology, allows us to extract new knowledge from the same sources. At times this knowledge adds to what is already known. Other times it serves as an important correction to what has been deduced from previous archeological investigations. Drawing on examples from the experimental reconstruction of medieval wooden buildings at the museum Stiklestad National Cultural Centre, based on archaeological material, the aim is to give a better understanding of how the craftsman's perspective can provide an important contribution to our understanding of both medieval log buildings and medieval society.

439 SUSTAINING ARCHAEOLOGY: IMAGINING THE FUTURES OF ARCHAEOLOGY

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Wollentz, Gustav (The Nordic Centre of Heritage Learning and Creativity; UNESCO Chair on Heritage Futures) - Ribeiro, Artur (Kiel University)

Session format: Regular session

To create a more sustainable archaeology, we need the capacity to imagine how things can be different. During the last 10 years, there has been a momentum to the critique of the neoliberal structures determining and framing the professional lives of archaeologists in Europe and elsewhere. In these structures, ceaseless growth through fast science is propagated, perhaps at expense of slower and more careful engagements. This critique has highlighted the unsustainability of our practices and the structures we operate in. However, arguably, archaeology has not always had the creative and imaginary capacity to imagine how things can be different and what opportunities there may be now to make positive change. Therefore, we would like to focus our session on possible ways to move forward from the critique towards actions in the present aiming for a more sustainable archaeology.

Our central concern is imagining what sustainable forms of research are possible in the future, how this research could look like and operate, and what actions we can take to move in those directions. Given how our societies are developing historically, we should think about the obstacles and how to overcome them in order to sustain archaeology as a practice.

The session aims to broaden the horizon of what may be possible, rather than determining one desirable outcome. The diversification of possibilities and opportunities is a goal. Furthermore, the ideas presented in the session can be built around ongoing research projects and environments, but it can also be built around ideas that are neither funded nor finalized yet. This is a session where imaginary, creative and novel ideas are valued, but these ideas can very well still be in-the-making.

ABSTRACTS

1 **FORESIGHT IN ARCHAEOLOGY AND HERITAGE - POTENTIAL AREAS WHERE ARCHAEOLOGY CAN CONTRIBUTE TO MORE SUSTAINABLE FUTURES**

Abstract author(s): Wollentz, Gustav (Nordic Centre of Heritage Learning and Creativity; UNESCO Chair on Heritage Futures)

Abstract format: Oral

In 2022 and 2023 ICCROM has been mapping out the future environment for research on heritage, through a literature review of existing Foresight and Forecasting studies. ICCROM has been doing this as part of a European Commission funded project named, ARCHE, Alliance for Research on Cultural Heritage, with the aim of developing a new Strategic Research and Innovation Agenda for heritage in Europe. The study has examined how different fields have been anticipating the future, what these futures look like and the implications and links to heritage. The study provides insight into possible future landscapes for archaeology, in relation to major global trends in society, such as the climate crisis, an ageing population, the digital revolution, and largescale transnational movement. I will look at how these possible future landscapes may inform actions and strategies today for archaeology to be more proactive in shaping a more sustainable future. Focus will be on three identified needs for the future: an economy centered upon wellbeing rather than economic growth, an ethical AI sensitive to human values, and a different, more inclusive, form of heritage in the future, less confined to the narrow of the nation-state.

2 **ARTIFICIAL INTELLIGENCE AND ARTIFICING KNOWLEDGE: EXPLORING THE RELATIONS AMONG DATA, INTERPRETATION AND THE CREATION OF ARCHAEOLOGICAL KNOWLEDGE**

Abstract author(s): Goodchild, Joel - Doonan, Roger (Archaeological Research Services)

Abstract format: Oral

Archaeological practice sits at a crossroads while beset by multiple challenges, perhaps the most pressing of which is how the discipline meaningfully contributes to confronting the impacts of climate change while envisioning more sustainable ways of living. In the face of the increasing pressure on economic and human resources, the prospect of automation through Artificial Intelligence (AI) may appear an attractive means of expediting archaeological investigation, particularly where mandated through legislation. While AI may present an attractive means of increasing productivity, it carries with it the prospect of a world in which AI defines the structures of power and knowledge that provide the conduits for the flow of data, information and the activities of knowledge building. Such approaches are susceptible to being co-opted by established power structures that may, wittingly or unwittingly, seek to reduce archaeology to a quantifiable resource to be identified and mapped, while overlooking the opportunity to create value in building meaningful knowledge and wider societal understanding.

Machine learning algorithms are in the main limited to processing single datasets, producing results by that, in some instances, defy tangible explanation. If interpreting the past is an inherently political process, then there are dangers in ceding the process of knowledge creation to opaque systems that are only partially understood, even by those who utilise them, raising questions about scrutiny and accountability. While the 'fast science' solutions offered by such methodologies have their obvious utility, it is only by retaining a place for recognised human-centred skills that allow integration across multiple datasets and encourage open discussion, that we can hope to elucidate the complex social, societal and environmental relationships that characterise past communities. It is the past lifeways of these communities that may offer an insight into how we express our humanity in a more sustainable manner.

3 **STEERING INTO THE SKID: COUNTERINTUITIVE STRATEGIES IN CONTEMPORARY ARCHAEOLOGY**

Abstract author(s): Ruffino, Jane (Södertörn University)

Abstract format: Oral

"What would an archaeology of data look like if we focused on mapping networks of physical things that carry, store, and manage data? How can we understand the Internet's material forms?" I've been sitting with this question for more than a decade. It started long before I even considered coming back to archaeology after many years in media and the software industry. What is the Internet? Where is it? Where do I start, and then, where do I stop?

COVID-19 hit just as I was starting this project. I made a pivot, looking at the architectures of the undersea fiber optic network, mainly because it was something I could do outdoors. Soon, Russia's war on Ukraine started, accelerating the already changing security practices, and forcing another shift. Then there was the Nord Stream explosion.

In this talk, I'll share some of what I've learned about the data cables under the sea, and about the business structures of critical infrastructure, especially in the Baltic Sea region. But also the challenges of doing work impeded by a pandemic, corporate secrecy and national security, and look for hope and possibility along the slippery and winding path. Rising inflation, ongoing political and economic instability, climate change. It's hard to say what's next, but it would be foolish to think this is the last time this project will be in the blast radius of a crisis.

As I respond to a constantly changing context, my work has become more like a documentary than a "normal" thesis. There's no stable ground. I can't fall back on an inherited archaeological or methodological structure that would make me seem – or feel – like a "credible" archaeologist. So, what if I applied the advice for drivers in a car that's skidding out of control, and just steer into it?

4 A FUND TO EXIST

Abstract author(s): Pintucci, Alessandro - Abbadessa, Anglea (Confederazione Italiana Archeologi)

Abstract format: Oral

The Convention for the protection of the archaeological heritage of 1992 was and is at the center of the international debate: it is common opinion that the Convention has represented a radical change in our discipline, making it one of those related to territorial development and urban planning.

It is equally known that there are a series of negative aspects which are a direct result of the introduction of this legislation (i.e. Wilhems 2014, Kristensen 2015, 2016): among them, above all an excessive bureaucratization of archaeological procedures, with the progressive abandonment of elaboration and synthetic aspect of archaeological studies and the very scarce propensity for the scientific publication of emergency and preventive excavations.

The general consequence was a progressive transformation of archeology into technical knowledge and an ancillary discipline of construction, which it now rarely opposes (in this sense the Anglo-Saxon term development-led archeology is perfectly fitting).

We will start from an analysis of the reasons for these changes, to formulate a proposal that brings research back to the center of interest in archeology, restoring dignity and value to preventive and emergency research and excavations.

Starting from the re-elaboration of known and tested experiences, a proposal will be formulated that is able to combine the principles of Malta (the so-called polluters pay), with market mechanisms, which it is now clear, cannot or cannot include the phase of research, study and publication.

5 NAVIGATING THE LABYRINTH: REIMAGINING ARCHAEOLOGICAL FIELDWORK AT KNOSSOS FOR THE TWENTY-FIRST CENTURY

Abstract author(s): Day, Jo (University College Dublin) - Trainor, Conor (University of Warwick) - Oddo, Emilia (Tulane University)

Abstract format: Oral

This paper reflects on a key aspect of developing a sustainable archaeological practice and discipline: balancing fieldwork, research and caring commitments. The pressures within academic archaeology to win large grants, to direct high-impact projects, and to publish results quickly are well-known. This metrics-driven framework in which many of us operate is further reinforced by funding structures that can disadvantage those who are time- and resource- poor, such as on short-term contracts, in precarious employment, and/or with caring responsibilities. Early career archaeologists are under enormous pressure, and studies have shown women, in particular, face many challenges returning to fieldwork after having children. The Knossos Legacy and Sustainable Archaeology Project (KLaSP), launched in 2022, was developed in response to this neo-liberal norm, taking into account the family circumstances and career stages of the PIs. KLaSP is an international collaborative project of The British School at Athens, Tulane University, University College Dublin and University of Warwick. Its focus is on studying and publishing legacy data from old excavations at the Cretan site of Knossos, a sustainable, non-destructive form of archaeological enquiry, and important for continuing work at a site boasting over a century of fieldwork, on an island with abundant tourism-related development. The three university teams shared teaching and financial resources to foreground pedagogy, as well as to achieve our research goals. Such an agile project that privileges post-excavation studies and caring responsibilities requires a re-imagining of archaeological fieldwork in Greece, a discipline with links to colonialism, a tradition of 'Big Digs' in the nineteenth and early twentieth centuries, and an emphasis on archaeology as digging. We suggest that our methodology will feed into wider calls for a more inclusive understanding of the nature of archaeological fieldwork and its links to tenure, promotion, and disciplinary prestige.

INVESTIGATING INEQUALITY, PRECARIETY AND OTHER MATTERS OF DISCONTENT IN NON-ACADEMIC CAREER PATHS OF ARCHAEOLOGISTS

Abstract author(s): Scheyhing, Nicola (Independent Researcher) - de Raad, Jesper (Municipality of Nijmegen) - D'Aprix, Michael (University College London)

Abstract format: Oral

Archaeology stretches across various specializations, countries, and sectors including traditional academic work but also careers established through the necessity of legal and regulatory structures. These careers include conservation, preservation, fieldwork in commercial and community sectors, non-academic specialists, and staff in the museum and heritage sector.

In 2021, Brami et. al. (2022) launched a survey with the Early Career Archaeologist (ECA) Community of the European Association of Archaeologists (EAA) to understand the career challenges ECAs face. The results highlighted the often precarious and demoralizing circumstances ECAs face in academic careers. The survey and evaluation raised needed awareness but were limited to a single sector. The ECA community represents all ECAs, prompting a second, broader survey to understand inequality, precarity, and other issues facing archaeologists in non-academic areas.

Those career paths are a valuable yet poorly understood part of archaeology as the focus is on more traditional academic careers. New demands of development, regulations and climate change are leading to a rapidly expanding non-academic sector that needs to be understood. The academic survey addressed several areas where knowledge of the discipline was lacking: economic stability, job availability, physical or mental health, well-being, bullying, care responsibilities, and a possible lack of recognition of research value.

These variables need to be better understood in a part of archaeology that differs within regional, and federal states of countries making the field diverse and the number of professionals on those career paths currently unknown.

This paper is on the second survey that will be launched in March 2023; the process that led to the decision, the development of the questionnaire, and preliminary conclusions. The aim is to understand our profession so we can create a more equal, diverse, and sustainable field for a future that promises to be even more challenging.

CAVE CONCERNS: METHODOLOGICAL AND THEORETICAL DEVELOPMENTS IN CAVE ARCHAEOLOGY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Parkinson, Eóin (Queen's University Belfast) - Conati Barbaro, Cecilia - Ochando, Juan (Sapienza University of Rome)

Session format: Regular session

From prehistory to the present, caves have always been central places in the natural landscape that have drawn our attention. For this very reason, caves and their contents are important reservoirs of archaeological and palaeoecological information, and have an almost unique capacity to capture long-term perspectives on human activity and the environment. In some cases they may be visually prominent features of the landscape, while in other cases cave contexts represent secluded, dark and subterranean spaces. This duality lends itself to a broad spectrum of uses and meanings, reflected in a similarly wide variety of archaeological remains and often complex stratigraphic records. In a practical sense, the diversity of taphonomic processes at play, their occupation histories and duration of use present many challenges to archaeologists working in cave environments. The excavation, exploration and analysis of these places thus requires a considered and multidisciplinary approach.

In mind of the broad-spectrum of data, interpretations and methodologies that can be applied in their study, this session aims to draw together active researchers working on the archaeology of cave sites with the view towards discussing and developing a standardised framework of field documentation techniques. We seek contributions discussing innovative and novel approaches to the excavation of caves, ranging from new and emerging methodologies, fieldwork strategies, recording techniques, scientific analyses and post-excavation analyses, to recent theoretical developments. We also seek to bridge the gap between those scholars working on caves from typically practical- or science-led perspectives, with those coming from more with theoretically inclined perspectives. We welcome and encourage a wide variety of contributions from across world archaeology, irrespective of chronological and geographical boundaries.

1 THE DESCENT: GEOGRAPHICAL INFORMATION SYSTEM (GIS) MAPPING AS A METHOD OF OSTEOARCHAEOLOGICAL AND TAPHONOMIC ANALYSIS IN EARLY NEOLITHIC CAVE BURIALS

Abstract author(s): Warburton, Keziah (University of Central Lancashire)

Abstract format: Oral

Caves have long been recognised as an important aspect of Neolithic burial practice and our understanding around such practices has been supported by taphonomic analysis and re-analysis of original excavations. This research aims to assess whether Geographic Information Systems (GIS) can be used as a tool for exploring taphonomy, currently under researched in human cave assemblages. Through our understanding of taphonomic patterns at an element, body and stratigraphic level, site specific inferences of burial practices can be reconstructed and patterns across cave burials assessed.

Two main sites were selected for analysis, Cave Ha 3 (Yorkshire) and Heaning Wood (Ulverston). Bone fragments were assessed for taphonomic modifications and mapped onto templates of bones in QGIS. This has created visual and quantitative data of changes at a body level. Analysis of Cave Ha 3 has highlighted possible burial locations and position of bodies. Spatial archive data was examined and taphonomic modifications were geographically referenced in QGIS. This provided information of its distribution, allowing for analysis of the movement of skeletal elements and possible locations of geological processes within the cave system.

Spatial data for Heaning Wood is less detailed and mapping is currently in progress. Eight of the nine individuals recovered from Heaning Wood have been radiocarbon dated, showing distinct episodes of burial spanning from the Early Mesolithic through to the Early Bronze Age.

Initial results suggest that QGIS can provide excellent visualisation of taphonomic modifications, regardless of whether a site has spatial legacy data. It has allowed analysis of intra and inter-body taphonomic changes. For sites that do have context data, QGIS provides a more traditional use, mapping where these modifications have occurred within the cave. This has implications for understanding original deposition, geological processes and the relationship between the buried bodies and cave.

2 VIRTUAL PALEOANTHROPOLOGY IN KARSTIC ENVIRONMENTS. THE CHALLENGING CASE OF THE NEANDERTHAL SKELETON FROM ALTAMURA (SOUTHERN ITALY)

Abstract author(s): Buzi, Costantino (Catalan Institute of Human Paleoeology and Social Evolution - IPHES-CERCA; Department of History and History of Art, Universitat Rovira i Virgili) - Boggioni, Marco (School of Paleoanthropology, Perugia) - Profico, Antonio (Department of Biology, University of Pisa) - Riga, Alessandro (Department of Biology, University of Florence) - Manzi, Giorgio (Department of Environmental Biology, Sapienza University of Rome)

Abstract format: Oral

Discovered in 1993, the so-called “Altamura Man” (simply “Altamura” from now on) is a nearly complete Neanderthal skeleton dated between 172 ± 15 ka and 130.1 ± 1.9 ka. Within a spectacularly scenic cave setting, the skeleton lies between speleothems and is extensively covered by flowstones and coralloid concretions. The peculiar conditions of deposition and preservation inside the Lamalunga cave – the karstic system in southern Italy where the specimen was found and is still preserved – entail difficulties for its physical removal and ex-situ preservation, which adds up to a decision-making impasse. Yet, the specimen is one of the oldest Neanderthals ever discovered, and possibly the best preserved pre-modern human fossil in the entire paleoanthropological fossil record to date, thus deserving a thorough study of its accessible parts. From 2017 to 2020 we carried out an extensive investigation of the specimen in situ, thanks to a multidisciplinary project funded by the Italian Ministry of University and Research (MiUR, PRIN 2015), that also included an assessment of the condition of the karstic system. For investigating the skeleton, digital acquisition techniques, virtual anthropology methods, and endoscopic technologies, specifically adapted to the difficult microenvironment of the cave, were applied to perform the most detailed assessment possible of Altamura in its present conditions. One of the main outputs from the data collected was the reconstruction of its cranium, obtained by an unprecedented “virtual extraction” of this portion of the skeleton from the cave. The observations done on Altamura in such a peculiar deposition context provided an insight into human evolution and dispersal at the onset of the Late Pleistocene in Europe, and a first glance at the information on the Neanderthal biology this amazing specimen can provide.

3 CAVES IN THE FRANCONIAN JURA, NORTHERN BAVARIA, GERMANY. HOW TO DEAL WITH EXCAVATIONS FROM PAST CENTURIES

Abstract author(s): Burgdorf, Phil (Professur für Ur- und Frühgeschichtliche Archäologie, University of Bamberg)

Abstract format: Oral

The simultaneous appearance of human bones and artefacts lead to an ongoing discussion about the ritual activities that took place at prehistoric cave-sites. Were they used as sacrificial sites or burial places of a community? Non-professionals and archaeologists excavated most of the caves in the Franconian Jura from the 1920s to the 1970s. Due to World War II and other external circumstances, only a selection of bones and artefacts have been preserved. Can cave-sites excavated decades ago still yield new research results?

As part of a research project, eight sites from the Urnfield Culture and the Iron Age are being reinterpreted on the basis of new scientific data. After all these years bone preservation remains excellent. Recently sampled C14-series are based on the minimum number of individuals (MNI) per cave site. Overall 86 samples determine the occupation sequence of five caves for the first time. Intervals between these periods appear too long for regular burial sites. In addition kinship relations are only proven for two individuals at only one site. The caves sampled so far did probably not serve as a burial site for a single family. Therefore, other reasons for visiting the caves must also be considered.

The lack of modern documentation complicates the study of the sites, nevertheless drawings and photos provide information on the distribution of finds. All available information is transferred to a georeferenced floor plan for taphonomic analyses. The distribution of the finds as well as the accessibility of the individual rooms can provide important clues about the ritual acting at cave-sites.

4 WHAT DOES IT MEAN TO LIGHT A FIRE IN A CAVE? A NEW METHOD TO UNDERSTAND HUMAN-CAVE-FIRE INTERACTION

Abstract author(s): Kedar, Yafit - Barkai, Ran (Tel Aviv University)

Abstract format: Oral

The use of fire is abundant phenomena in many archaeological cave sites. An air circulation model, coupled by computer simulations, enables the analysis of influence of fire use on the natural cave environment. Using the suggested method, we can identify hearth locations and characterize activity areas by analyzing warmth and smoke dispersal emitted from hearths in cave sites. The analysis of warmth, and smoke density are affected by various parameters such as: the structure of the cave, the size of the cave mouth, the location of the hearth and wind direction. We will use Lower Paleolithic Lazaret cave, France, as a case study. We will also use the case of Middle Paleolithic Tor Faraj, Jordan, which demonstrates the usage of hearths in a rock shelter. In this case, early humans had to also consider the external wind direction which has a major effect on the smoke dispersal.

In case of deep caves, we analyzed the influence of fire usage such as torches and oil lamps on human survival in this extreme environment because fire usage changes the oxygen, CO and CO₂ density and influences the temperature and humidity in the cave. Using this method, we can shed light on human activities in those caves such as the relevant fire type usage, fire intensity and number of parallel humans occupying the cave space. We will demonstrate the method on several case study from European upper paleolithic cave art.

5 MIND YOUR HEAD: MICROSEISMIC AND MICROACUSTIC MONITORING FOR ARCHAEOLOGICAL EXCAVATION SAFETY AND CULTURAL HERITAGE PRESERVATION

Abstract author(s): Conati Barbaro, Cecilia (Dipartimento di Scienze dell'Antichità, Sapienza Università di Roma) - Fiorucci, Matteo (Università degli Studi di Cassino e del Lazio Meridionale - Dipartimento Ingegneria Civile e Meccanica) - Grechi, Guglielmo - Marmoni, Gian Marco - Martino, Salvatore (Dipartimento di Scienze della Terra - Sapienza Università di Roma; Centro di Ricerca per i Rischi Geologici CERIG)

Abstract format: Oral

The issue of cave or rock shelter safety during archaeological excavation is usually addressed in the plans but rarely systemally managed in a surveying project.

In this work, we demonstrate how engineering geological reconstructions supported by geophysical methods can be used to assess rock stability and design safety measures for caves. Furthermore, the application of microseismic monitoring can guarantee personnel safety during excavation activities, mainly when carried out in fractured rock masses, preserving the integrity of the archaeological heritage. The Battifratte cave case study is considered, an archaeological site carved into the Poggio Moiano Synthema's Middle Pleistocene travertine formation and occupied from the Middle Palaeolithic to the Middle Bronze Age. According to sedimentological and micromorphological data, the formation of the archaeological sequence is linked to karst groundwater circulation. The excavations are being carried out beneath a large rock shelter and at the mouth of a narrow tunnel leading into the cave. The possible presence of

cavities below the ground floor was examined using ambient seismic noise measurements, as well as rock mass characterisation and 3D photogrammetric reconstructions were carried out. Surveys revealed the vault has experienced several rock falls over time, and the ceiling is to date affected by numerous joints and dislodged rock blocks prone to fall.

The use of microseismic and microacoustic geophysical techniques as a monitoring strategy in archaeological sites supports the excavation project design and aims of identifying potential precursor signals of incipient deformation in rock blocks threatening the area under excavation. This topic is critical in archaeological exploration planning to ensure both the safety of researchers and the long-term preservation of archaeological sites.

Cross-fertilization between the Earth Sciences and Cultural Heritage Sciences results in the definition of best practices to be applied in different archaeological contexts.

6 HOW CAN WE USE MAINSTREAM CAVE SURVEY TECHNIQUES IN CAVE ARCHAEOLOGY? THE DRAKOTRYPA CAVE, THASOS ISLAND GREECE

Abstract author(s): Georgiadis, Fotis (EPS - Ephorate of Palaeoanthropology - Speleology, Hellenic Ministry of Culture) - Pennos, Christos (Department of Geography, University of Bergen)

Abstract format: Oral

Topographical documentation is a crucial factor of the archaeological fieldwork research. Especially in caves it often proves to be particularly challenging (difficult access, complex layout of spaces, stratigraphical complications common in cave-sites). The Ephorate of Palaeoanthropology-Speleology carried out excavations in “Drakotrypa” (Dragon-hole) cave on Thassos island, Greece, in 2015-2018. The cave was used since the end of the Neolithic period as a site of temporary residence. Later, from the 7th c. B.C., “Drakotrypa” was a cult cave. In order to study the cave floor morphology we developed a detailed digital terrain model (DTM). To construct the DTM we used the Distox modified Leica Disto rangefinder module (Heeb 2010) that has the ability to record simultaneously the distance, inclination and the bearing of every shot. We anchored our survey on a predefined point at the cave entrance and used it as a geographical reference point. Following, we generated survey stations on the cave floor and made arbitrary shots towards the floor in order to achieve the best spatial coverage of the uneven morphology. The generated points were later exported through Therion cave survey software (Budaj and Mudrak 2008) as a point cloud where every point was registered with real word coordinates and elevation. Finally, we imported the point cloud into a GIS software and used Nearest Neighbour Interpolation to generate the final DTM. The use of the DTM enabled us to acquire a solid 3D topographical documentation of the cave and the excavated strata, allowing us to highlight the most prominent features of the cave floor and to have a detailed overview even at a later time.

References:

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- Heeb B., 2010: A general calibration algorithm for 3-axis compass/clinometer devices. Cave Radio and Electronics Group Journal 73.

7 MOLECULAR INDICATORS FOR DETECTING AND DESCRIBING THE PAST HUMAN PRESENCE IN CAVES. CASE STUDY OF SASPowska ZACHODNIA CAVE, POLAND

Abstract author(s): Gryczewska, Natalia (Faculty of Archaeology, University of Warsaw; Faculty of Biology, Biological and Chemical Research Centre, University of Warsaw) - Chmielewska, Monika (Faculty of Biology, Biological and Chemical Research Centre, University of Warsaw) - Kot, Małgorzata (Faculty of Archaeology, University of Warsaw) - Sulwiński, Marcin - Suska-Malawska, Małgorzata (Faculty of Biology, Biological and Chemical Research Centre, University of Warsaw)

Abstract format: Oral

Recent years brought new unexplored biogeochemical methods giving insight into a past human settlement when applied to cave sites. The Cracow-Częstochowa Upland is a karstic region in southern Poland with an archaeological record of long and variable use of caves but with often fragmentary or enigmatic traces of human occupation. It is a crucial area for testing the potential of these methods in relation to archaeological data.

The research focuses on applying analyses of polycyclic aromatic hydrocarbons (PAHs), sterols and bile acids on sediment samples from selected caves (Ciasna, Saspowska Zachodnia, Bramka, Bisnik, Łokietka, Łabajowa and Shelter in Smoleń III) and testing their potential in detecting human presence.

Ten sediment samples from the Saspowska Zachodnia Cave were extracted, purified, and analysed using GC MS methods to assess the concentrations of biomarkers preserved in cave sediments. We used selected PAHs compounds, carbon (C), nitrogen (N) and phosphorus (P) content in sediments to detect the chemical print of local fire and decomposition processes of organic materials. Analysis of combined selected sterols and bile acids was used to recognize the human and other animals presence.

This approach's preliminary data showed promising results in a case study of Sąspowska Zachodnia Cave. It is one of the few sites in the region with a well-stratified Holocene sequence. Two distinct human occupation periods were identified here, one connected to the Neolithic and the other to Bronze Age, while scarce finds of flints in older parts of the sequence suggest the possibility of human activity in earlier periods. The results of PAHs analysis partially overlap with other data on fire-related activity at the site. Analyses of sterols and bile acid confirmed the presence of anticipated compounds and allowed to identify activity of both carnivorous and herbivorous species in the cave. Additional study of reference material is necessary.

8 BLUEFISH CAVES REVISITED: A GEOARCHAEOLOGICAL AND PALEOENVIRONMENTAL ASSESSMENT OF A POTENTIAL PRE-CLOVIS SITE IN THE YUKON TERRITORY OF NORTHWESTERN CANADA

Abstract author(s): Mandel, Rolfe (University of Kansas; Kansas Geological Survey) - Kisielinski, Caroline (University of Kansas) - Bourgeon, Lauriane (University of Kansas; Kansas Geological Survey) - Norman, Lauren (University of Kansas) - Heffner, Ty (Government of Yukon; Tourism and Culture) - Holcomb, Justin (University of Kansas; Kansas Geological Survey) - O'Rourke, Dennis (University of Kansas)

Abstract format: Oral

Bluefish Caves, a cluster of four small rockshelters in the Yukon Territory of NW Canada, was excavated during the 1970s and 80s under the direction of Jacques Cinq-Mars. Caves I, II, and III yielded faunal remains dating to ca. 30-10 ka contained in loess, plus artifacts. Also, AMS 14C ages determined on cut-marked bones identified during a recent taphonomic analysis of the faunal assemblage suggests that humans occupied the site as early as 24 ka. Hence, Bluefish Caves may be the oldest recorded archaeological site in North America.

Here, we report results of our recent investigations at caves III and IV. In 2019, limited archaeological testing was conducted at Cave III to gain a better understanding of site formation processes. Also, soil/sediment samples were collected for ancient DNA (sedaDNA) analysis to determine the feasibility of isolating and sequencing ancient genetic material of transitional late Pleistocene/early Holocene flora and fauna from subarctic loess. Following initial processing of sedaDNA samples, sequences suggest recovery of sufficient nucleic acids for identification of multiple taxa in those samples, thereby providing a more robust picture of LGM and post-LGM paleoenvironments in the region. Also, we relocated Cave IV, which was not excavated by Jacques Cinq-Mars. The entrance and interior of Cave IV are almost filled with sediments. In July 2022, we tested the area in front of the cave, exposing a ~1-m-thick deposit of loess containing remains of horse, caribou, and other late-Pleistocene fauna. Many of the bones will be 14C dated, and sediment removed from the test units will be fine-screened for micro-debitage. Also, soil/sediment samples were collected for ancient DNA (sedaDNA) analysis, and ongoing micromorphological and sedimentological analyses of the loess will help us gain a better understanding of site formation processes and the spatial integrity of any cultural deposits found in Cave IV.

A. CHALLENGES AND METHODS OF RESCUE EXCAVATION AT LOWER CEROVAČKA CAVE: CASE STUDY OF THE BRONZE AGE STORAGE OF VALUABLE GOODS

Abstract author(s): Kudelic, Andreja (Institute of Archaeology Zagreb) - Tresić Pavičić, Dinko (Kaduzej LTD.) - Marijan, Mia (Heritage 993)

Abstract format: Poster

Rescue archaeological excavations of Lower Cerovačka cave represent a challenging and relatively rare type of intervention in the archaeology of Croatia. This extensive archaeological excavation was conducted in 2019, covering an area of 210 square meters along the route of a new pathway, spanning 10 meters from the entrance, 30 cm in depth, along the axis of the main cave channel. As this section of the cave area has an average width of only 4 m, the excavation covered a significant part of the cave channel. The extent of the excavation, limited time and working conditions in the cave, and difficult access to the cave entrance conditioned the fieldwork strategy. The aim was to identify distinct stratigraphic units and the preserved data of the primary context and to understand the processes of site formation that affect the accumulation of deposits. Due to the elongated surface, the excavation was carried out in 4 meters long segments, according to a preset square grid, and applying dry sieving of the sediment. Considering the small thickness of archaeological deposits, the digital photogrammetry method proved to be fast, effective and precise, representing an appropriate documentation method.

Even though the archaeological features are partly destroyed due to recent electricity installations and past archaeological and geological excavations, the applied excavation method revealed intact deposits throughout the entire excavated area, changing the previous knowledge about the cave use. The strategy of analytical processing of the artefacts had to reconcile the impact of pathway usage affecting vertical and horizontal displacements of a significant amount of Bronze Age movable finds. Therefore, the post-excavation method proved essential for a more detailed

understanding of the use of the cave, including pottery refitting (3.5 tons) and the distribution analysis of other valuable artefacts in relation to the distribution of primary context features (hearths).

443 CLIMATE CHANGE ADAPTATION IN THE PAST AND SOLUTIONS FOR THE FUTURE

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Kerr, Sarah (Aarhus University) - Svensson, Eva (Karlstad University, Sweden) - Dikkaya, Fahri (TED University, Turkey)

Session format: Regular session

Adaptation in archaeological research is considered the capacity for humans to adjust their cultural systems in response to external changes; while the ability and readiness to adapt are considered central qualities of resilience. Adaptation to climate changes has emerged in archaeological discourse, providing a balance to a former propensity for studying climate-induced social collapse. While collapse brought wholesale impacts on all aspects of life, the central narrative in the human past is an ability and willingness to adapt behaviour. Therefore, a constant in the past human-climate relationship is mitigation, adaptation, and resilience. However, resilience and capacity to adapt are highly social phenomena and dependent on a variety of qualities present in a society at risk.

Today, anthropogenic climate change is affecting societies across the world. While impacts have varying degrees of severity, it is clear that more and larger areas will be impacted by climate change and the communities in those areas will have to adapt. Fundamentally, this requires a change in human behaviour: how adaptive are humans to a changing climate and the challenges it brings? How climate conscious were past societies? How do humans instigate change and can we learn from past mitigation? This session will explore adaptation to climate change in the past and discuss the potential, viability, and challenges of translating mitigation scenarios into sustainable solutions for today's problems.

We welcome case studies which show evidence of past cultural adaptation plus examples of how past narratives can be used in today's climate communication and action. We welcome critiques and discussions on how we identify and measure adaptation in archaeological evidence. The session particularly welcomes papers exploring the medieval and post-medieval periods.

ABSTRACTS

1 2027: WAKING THE AKU

Abstract author(s): Gossen, Candace (Ronin Institute)

Abstract format: Oral

Humans have recorded celestial events for as long as we have been able to draw and write. Pictographs, petroglyphs and even standing stones mark moments in time on the landscape to remember changing seasons and repeating cycles. Serendipity makes these cosmic relationships. For this story called Waking the Aku, it is a narrative in the Rapa Nui culture that lives along with the scientific data obtained from coring the crater lake Rano Kao on the island of Rapa Nui. New technology was used to analyze aquatic cellulose from the plants along with fossil pollen that once lived on the floating mat of Rano Kao and remained anaerobic for thousands of years until this expedition crew pulled up 9 meters and 15,000 years of climate history. In the sediments are repeating global cycles of extreme cold and hot events occurring every 637 and 719 years respectively. The one of interest for this paper is the last cold event that began in 1390AD, peaking in 1456AD and ending in 1505AD when the moai were last carved and the trees began to disappear. Simultaneously in the appearance of Akus are also Tapu/Taboo which seek to find resiliency within the changing landscape. Many have used the story of Easter Island as a model of Collapse Theory, but with new evidence and technology, the details have unfolded with a different story about what really happened to the giant palms and diversity of flora and fauna on the island. The greater importance is that these global repeating cycles are in our near future, and 2027 is marked as the beginning of another cold climate event. The question will be: How resilient are we in the Waking of the Aku?

2 OATS, PRAYERS, SETTLEMENT RELOCATIONS, DYKES AND TREES - WHAT CAN WE TODAY LEARN FROM PAST CLIMATE CHANGE MITIGATIONS?

Abstract author(s): Pettersson, Susanne (Independent) - Johansson, Annie (County Administrative Board, Varm-land) - Svensson, Eva (Risk and Environmental Studies, Karlstad University)

Abstract format: Oral

People and societies have faced numerous risks and crises through history. Sometimes these risks and crises have been fatal, but most often people have found ways to mitigate the crises and adapt to new circumstances, for better

or for worse. The Little Ice Age (LIA), and the Late Medieval Agrarian Crisis, are among some of the greater challenges people and societies have faced. In many areas, LIA threatened the agrarian economy, and there were floods, erosion, heavy rain, increasing cold and other challenges. There are numerous examples of different mitigations, that appear rational to present times, such as improved housing and heating, changing agricultural practices such as increased cattlebreeding and alternative crops, dykes to cope with flooding etc. Other mitigations appear less rational to us, such as prayers, religious rituals and popular belief practices. In this paper some common mitigations and adaptations to climate change practiced in response to the threats of LIA will be presented and discussed regarding learning from the past for future sustainable solutions.

3 ORIGIN OF GOLDEN HORDE TOWNS ON THE TERRITORY OF UKRAINE IN FRAMES OF NOMADS' LIVING SPACE OCCUPATION ADAPTIVE STRATEGY

Abstract author(s): Chentsov, Yaroslav (Odesa Mechnikov National University)

Abstract format: Oral

The Mongol Empire, which resulted from the unification of nomadic tribes and in the 13th century captured a huge part of central Eurasia, at the end of this century, was divided into two independent states, one of which was the Golden Horde.

Under this study, the author makes an attempt to trace the transition of a large number of nomadic multi-ethnic tribes of the Golden Horde to a settled way of life, including foundation of their cities.

The most of the tribes, which later had formed the core of the Golden Horde, were originated from the Central Asia. This region is characterized by specific natural and climatic conditions that made it extremely difficult to settle down and did not give the slightest possibility of agriculture, but favourable for breeding large herds of cattle for pasture. In such a way the primary adaptive strategy of living space exploitation inherent for Golden Horde population was formed.

After the capturing a large number of lands and establishing their administrative control over them, the nomads of the Golden Horde, who ended up on the territory of contemporary Ukraine had to adapt to new for them climatic and environmental conditions favourable for long-term and diversified land cultivation. Due to this the nomad tribes have to change their occupation strategy. Archaeologically it could be traced by gradual replacement of previously typical for them archaeological sites, such as burial mounds and scattered sites, by new ones, among which one can detect full-fledged settlements, and eventually cities.

In the result, the nomadic tribes turned out to be highly adaptive to climate and habitat changes and did not leave the occupied territories, but, instead, elaborated the new, more settled, way of life and introduced their culture to these lands, which, in turn, greatly influenced the historical destiny their inhabitants.

4 CONTINUITY OR CHANGE? RESEARCH ON LONGHOUSES AND SOCIAL STRUCTURES IN IRON AGE ROGALAND IN CONNECTION WITH THE 6TH-CENTURY CLIMATE CRISIS

Abstract author(s): Dahl, Hilde (University of Stavanger)

Abstract format: Oral

AD 536 has been suggested as the worst year in history to be alive. Proposed volcanic eruptions in Iceland or in North America caused a volcanic winter that made life difficult: people were starving, populations decreased, and settlements were abandoned. To add to their woes, a further worsening of the climate called the Late Antiquity Little Ice Age prolonged this suffering. These climate changes would have been felt in all of Europe, and especially in the colder, northern regions, such as Rogaland in Norway.

The Iron Age population of Rogaland lived in longhouses, the main residential structure from the Bronze Age to Late Iron Age, a period of 3000 years, and a generally unchanged blueprint of a home. It was a major, multifunctional institution in the Iron Age world, serving as home, as well as the main political, social, and cultural arena. Physical longhouses were connected to social structures in society through structural duality, thus changes in the physical layout of the houses could indicate changes in society and vice versa. By analysing the physical remains of longhouses using time plots, it is possible to explore how the Iron Age society in Rogaland reacted to the climate changes, both in terms of potential changes to their physical surroundings, and in extension also the social structures that upheld their society. Related to modern-day climate problems, this research provides an insight into human resilience and adaptability to a climate crisis, and thus potentially ideas for how we might face our own.

5 ADAPTATION AND RESILIENCE IN LATE MEDIEVAL JUTLAND (DENMARK)

Abstract author(s): Kerr, Sarah (Aarhus University)

Abstract format: Oral

This paper examines the evidence for adaptation in the face of climatic anomalies in late medieval Jutland, central Denmark, and the potential of working with local communities today to use this knowledge for climate action.

It explores the case studies of Nørre Vosborg, a site comprising two late medieval manor houses, describing the architecture and archaeological remains from surveys and excavations. It is argued that Nørre Vosborg 1 was moved approximately 900m inland after it sustained considerable flooding and damage, likely at the end of the medieval to early modern period. In addition, Nørre Vosborg 2 was also moved either pre-emptively or after some damage from the same environmental events. The climatic events which drove these settlement changes appear to have been a series of storm surges in the sixteenth century, including a particularly violent event in c.1593. The combination of archaeological, architectural and environmental data at Nørre Vosborg 1 and 2 allows contemplation of the human response to climate disasters, that is resilience and adaptation, including analysis of the pace of these responses.

The paper turns to set these examples in the wider context of adaptation. How adaptive were medieval communities? Can the ability to adapt be harnessed and used in today's climate change responses? It is acknowledged that despite challenges related to the 'scaling up' from local case studies to a global problem, awareness of human resilience in the recent-past may be an important element of today's climate communication, and thus, climate action.

448 RESIZING AND REDESIGNING THE URBANIZATION POLICY OF THE DANUBE PROVINCES IN THE LATE ROMAN PERIOD (END OF 3RD-7TH C AD)

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Aparaschivei, Danut (Institute of Archaeology in Iași - Romanian Academy) - M'Barek, Brahim (University of Strasbourg) - Topalilov, Ivo (Institute for Balkan Studies and Centre of Thracology) - Bugarski, Ivan (Institute of Archaeology, Belgrade)

Session format: Regular session

The whole evolution of Roman society, as well as its scholarly perception, is altered by the transformations sweeping the Empire during the 3rd century. Regarding the Danube provinces, the most visible such transformation is the heavy revision of the defense system, as extant settlements were reinvented as strategic points, reinforced by a line of new forts, parallel to the border.

In this context, certain questions emerge volens nolens, which have obviously been debated in the literature, but to which new archaeological research can bring some clarifications. For example, we might ask whether we are dealing with a large-scale project, organized at the imperial level, or were there regional, diocesan or provincial solutions? Who were the executors of this project of fortification system redesign? What were the relations between the army and the civilians inside the new built urban structures and the contribution of each in this work of resizing and redesigning the cities? What do we know about the relocation of buildings within the urban topography, perhaps with a discussion about the new buildings adapted to the political, military, economic and spiritual changes of this period? What do we know about the techniques of construction and the materials used for the new edifices of the city? And how much do we know about the relations between the urban center and the rural territories (the hinterland)? Papers are invited which address these questions, and also which extend the timeframe to cover the time when these fortified cities ceased to function.

ABSTRACTS

1 LATE ROMAN PROVINCES ON THE LOWER DANUBE: EMERGENCE OR RE-EMERGENCE?

Abstract author(s): Stoev, Kalin (Institute for Balkan Studies and Centre for Thracology)

Abstract format: Oral

The Later Roman provincial system created several new administrative entities. The problem has been long debated from different points of view, but a fresh discussion on the political, administrative, geo-strategical and reasons behind the new subdivisions from the perspective of the historical background in the region could present a contribution to the Roman administrative practice in general. Were the new provinces an ad hoc response to the changing political circumstances, or a result of a long development? Can we see in their creation old administrative reflexes and traditions? A detailed debate can produce a stable picture covering the literary, epigraphic and archaeological sources. The starting point of the study are the changes in Roman life in the provinces of the Lower Danube from the middle of the

3rd century AD, when the Gothic invasions in these lands contributed to the decline of public life and led to drastic changes in the military and civilian command of the provinces and their accompanying infrastructure.

2 THE LATE ROMAN FORTRESS FROM ARGAMUM IN THE LIGHT OF RECENT ARCHAEOLOGICAL DISCOVERIES

Abstract author(s): Munteanu, Lucian - Honcu, Stefan (Romanian Academy, Iași branch, Institute of Archaeology)

Abstract format: Oral

At this very moment, the history of Argamum is, unfortunately, a mystery. First mentioned as Orgame in the 6th century BC by Hecataios of Miletus, the fortress from the Dolojman Cape continued to exist until the beginning of the 7th century AD.

Some new information was recently revealed, following the archaeological investigations carried out. The town defence wall, as it is visible today, was built in the Tetrarchic or Constantinian age and seems to have suffered repeated destructions. The city gained further importance once it was declared a bishopric by the imperial authority in the second half of the 6th century. At the same time, as a naval port on the Black Sea, Argamum also held a privileged position. The discovery of no less than five basilicae, craft workshops and a vast neighbouring agrarian territory suggests a demographically flourishing background, during the 6th century.

The archaeological research at Argamum - Small Gate Sector uncovered the 4th-7th centuries city wall and gate. The Late Roman enclosure wall seems to have had a narrower perimeter at that stage, compared to the early Roman one. Thus, the results of the investigations carried out in this sector have been mainly intended to obtain more information on the role played by the Small Gate in the economic development of this site. From the outset, it was noted that the Small Gate was a pedestrian one, securing the access from the port to the citadel. The aim of our presentation is to point out the function and role of the Small Gate within the fortress, which, at some moment, provided the link between the citadel and its harbour.

3 AT THE EDGE OF EMPIRE. NOVIODUNUM - FORTRESS ON THE DANUBE LIMES, PROVINCE OF SCYTHIA MINOR

Abstract author(s): Honcu, Stefan (Romanian Academy) - Stănică, Aurel (Gavrilă Simion Eco-Museum Research Institute Tulcea)

Abstract format: Oral

With the annexation of the territory between the Danube and the Black Sea - Dobroudja - to the province of Moesia Inferior during the period of Emperor Vespasian, Noviodunum begins its economic, military and urban evolution, as the main base of the Roman fleet from the Lower Danube - Classis Flavia Moesica - and the headquarters of other military units (detachments of legio V Macedonica and of legio I Italica, legio XI Claudia and of the unit of Milites Primi Constantiniani). Noviodunum is also the terminus point of the military and commercial road that crossed the province coming from Marcianopolis and that met here the limes road.

Throughout the Dominate period, Noviodunum remained an important fleet station and headquarters of the legio I lovia Scythica, who was charged with defending the northern border of the province. The prefect of the Lower Danube fleet, now called Classis Ripae Scythicae, was still based here.

Archaeological investigations in the last ten years have focused on the south-eastern side of the enclosure wall. In this way, three towers were investigated - the Large Tower, The Corner Tower and the Tower A - thus highlighting several constructive phases. According to archaeological finds, numismatic and the literary sources, the city survived until the middle of the seventh century, the latest coins being from the Emperor Heraclius.

The aim of our communication is to present the latest information on the evolution of this important center, in the province of Scythia Minor. Thus, information on the economy and trade relations of the fortress with other cities and provinces of the Empire will be brought into question. At the same time, the strategic role that Noviodunum had in the proper development of political and diplomatic relations with the "Barbarian" populations north of the Danube will be underlined.

4 RESIZING AND REDESIGNING THE FORTIFICATION SYSTEM OF IBIDA (SCYTHIA PROVINCE) IN 6TH C. AD

Abstract author(s): Aparaschivei, Danut (Academia Româna-Branch Iasi, Carol I, 18, CUI 4540917) - Paraschiv, Dorel (Institutul de Cercetări Eco-Muzeale Tulcea)

Abstract format: Oral

The walled town of Ibida underwent a spectacular evolution within the province of Scythia, as early as the first part of the 4th century AD. Being built, most likely, on a Roman habitation nucleus that can be found in the archaeological

discoveries dated in beginning of the 1st century AD, Ibida had a system of fortifications composed of three elements. First of all, it had an enclosure that surrounded the walled town of about 24 ha, then a hilltop citadel measuring about 2.50 ha, as well as a surveillance building located on the highest point in the area.

The archaeological research was able to provide important details about the constructive changes undergone in different stages of evolution, starting with the construction of the enclosure and up to the abandonment of the fortress, in the first decades of the 7th century.

The 6th century is regarded as one of the most significant stages in the urban evolution of Ibida. Emperor Justinian's initiative to restore the fortifications of the existing strongholds and significantly strengthen the border areas caused major changes visible in archaeological outlook.

In at least three research sectors at Ibida we were able to identify significant adaptations and modifications to the enclosure walls, the towers, the access ways on the enclosure and even the edifices erected around these defensive elements. The commencement of archaeological excavations also on the hilltop citadel allowed the extraction of valuable information about the technical capabilities of the engineers of the time, as well as the adaptability to the special topography of the area.

Our paper shall undertake the presentation of the changes to the fortification elements that could be identified following recent archaeological excavations, and we attempt to link the present context with situations reported in the other fortresses in the neighboring areas of Ibida.

5 ZALDAPA. A FORTRESS CITY IN THE HINTERLAND OF THE LOWER DANUBE DURING LATE ANTIQUITY

Abstract author(s): M'Barek, Brahim (EVEHA)

Abstract format: Oral

At the invitation of Bulgarian colleagues, an international team of French and Canadian archaeologists has just completed the field phase of an archaeological study of the site of Zaldapa, a Late Roman city in the Danube hinterland, at the border of the provinces of Moesia and Scythia Minor. One of the subjects of study addressed by the excavation was the fortifications of the city.

Since the first works of the Skorpil brothers at the turn of the 20th century, until the advent of aerial studies via satellite photos, Zaldapa remained on the fringe of archaeological excavation programmes. The project to study the fortifications of Zaldapa was born out of the desire to compare these ancient observations and the information obtained from satellite photos with the elements obtained from traditional archaeological excavations. I was decided to focus on the north-eastern gate of the city. Partially cleared at the end of the 19th and beginning of the 20th centuries, the choice of this sector as the subject of study aimed to verify the degree of validity of the observations of our prestigious predecessors, to complete their data, and to try to pinpoint as accurately as possible the chronological elements surrounding the construction, life and abandonment of the fortifications of the site. A other sector, a secondary postern on the northern rampart, was also subject to archaeological monitoring. It is thus possible to present the preliminary results of these excavation campaigns. These results allow us to understand and discuss the choices made during construction, to propose a chronology of subsequent alterations and adaptations, both on the scale of the site and on the regional scale of the Lower Danube, and to place the overall into the evolution of military architecture practices during late antiquity.

6 DEFENCE AND MILITARISATION OF WATER SUPPLIES: THE FORTIFIED CISTERN OF ZALDAPA DURING THE LATE ANTIQUITY

Abstract author(s): Rodé, Marine (French Culture Ministry; University of Strasbourg) - M'Barek, Brahim (University of Strasbourg)

Abstract format: Oral

Zaldapa (Krushari, Bulgaria) was a late Roman fortified city located in the hinterland of the province of Scythia, not far from its boundary with Moesia Secunda. It was strategically located on a road between the Danube and the Black Sea, which was a key artery for military logistics between the largest city of the Lower Danube, Marcianopolis, and the northern outposts of Noviodunum and Aegyssus. With nearly 25 ha, it was one of the major sites of this region which was particularly exposed at the time to barbarian invasions/migrations. Yet the site rarely appears in the textual sources and therefore remains poorly known. In 1949, the construction of an artificial lake at the edge of the site led to the exploration of the northwestern slope of the promontory and the discovery of at least two basins and a covered cistern, connected to the city by a tunnel. Only then explored on the first 5 meters, it was decided during the summer campaigns of 2021 and 2022 to pursue the subject with the team of the International Archaeological Mission in Zaldapa, in addition to and in parallel with the exploration of the north-eastern gate. The discovery of a postern leads us to new considerations regarding the existence of an access to water outside the fortified walls, its status and

evolution, as well as its relationship with the internal layout of the site. Finally, although the water supply of a fortress is considered an essential and priority requirement by the texts, only few examples of water supply outside the walls are excavated and the few known ones are in the Lower Danube.

7 THE END OF URBANISM? A REASSESSMENT OF THE ARCHAEOLOGICAL EVIDENCE FOR URBAN DESTRUCTION ALONG THE LOWER DANUBE

Abstract author(s): Reed, Fraser (Independent Researcher)

Abstract format: Oral

The prevailing view of urbanisation along the Lower Danube is that the cities of the riparian provinces ceased to function in the late 6th and early 7th centuries. Previous scholarship has demonstrated that successive invasions by the Avars, Slavs, and Bulgars were highly destructive events that had a devastating effect on the urban landscape of Moesia Secunda and Scythia Minor and that many cities in the region were heavily damaged or even totally destroyed during this time. Consequently, it is commonly held that this resulted in the complete breakdown of urban administration along the Lower Danube. There is, however, a tendency to use the instability of the period to fill gaps in the archaeological record or explain ambiguous evidence without adequate consideration of alternative explanations.

This paper re-examines previously published archaeological evidence from select cities in Moesia Secunda to better understand the impact of the invasions of the 6th and 7th centuries on the urban landscape of the Danubian provinces. While some cities in the region were certainly sacked and ceased to function as a direct result of military action, this paper argues that this was not necessarily the case at every site. Specifically, it analyses the archaeological material from Odessus (modern Varna, Bulgaria) and Nicopolis ad Istrum (near Nikyup, Bulgaria) to present a nuanced interpretation of the role military unrest played in the decline of urban centres between the Stara Planina and Lower Danube.

8 THE DEFENSIVE SYSTEMS IN DACIA RIPENSIS BETWEEN THE 4TH AND 6TH CENTURIES

Abstract author(s): Gargano, Ivan (Archaeological Institute Belgrade)

Abstract format: Oral

The proposed presentation will analyze the territory of the ancient province of Dacia Ripensis. It is one of the provinces that marked the northern border of the Roman Empire and it can be said that it is one of the least known. It included a territory between present-day Serbia, Bulgaria and Romania and, from the West, this province marked the beginning of the Lower Danube region.

It is known that, starting from the end of the 3rd century, Dacia Ripensis was subjected to a militarization, and the phenomenon is reflected in the high number of fortifications that have been discovered within its borders. Archaeological investigations have been carried out only for some of them, but despite this it is possible to recognize the topographic distribution of the strongholds and the great variety of plans and adopted forms.

The purpose of the presentation is to analyze on the one hand the textual sources which clearly refer to the construction of fortresses in Dacia Ripensis, such as the epigraphs, the Codex Theodosianus and the De Aedificiis of Procopius of Caesarea. On the other hand this work is intended in order to illustrate the architectural typologies most used in the context of non-urban fortifications: turrets, burgi, quadriburgia, auxilia encampments, and high ground outposts. In this regard it will be analyzed a single site for each of the listed types.

9 SINGIDUNUM AND ITS AREA IN LATE ROMAN AND EARLY BYZANTINE TIMES

Abstract author(s): Bugarski, Ivan (Institute of Archaeology, Belgrade) - Ivanišević, Vujadin (Serbian Academy of Sciences and Arts)

Abstract format: Oral

The important Roman city and the legion's base of Singidunum was located on a dominant site overlooking the confluence of the Sava and the Danube, in the area of the later Belgrade Fortress which has witnessed many changes over the past millennia. The remains of Singidunum are therefore hardly noticeable, which is particularly true of the later phases of the city. Destroyed by the Huns in 441, the city found itself under the Sarmatian and, from 471, Ostrogothic rules, to be reclaimed by the Empire in the early 6th century, when Anastasius settled the Heruli in its area. Although the urban layout is known only roughly, the areas of the cemeteries are better researched, illustrating the shrinking of the urban area and

population changes. Dated from the end of the 4th to the beginning of the 7th century, the Singidunum III cemetery was formed above the northern edge of the former city's core; apart from Late Roman graves it also included those of the foreigners. The other three Migration-Period necropolises, dating from the middle and the second half of the fifth century, were established both in the area of the former fortress and within the settlement. Judging by their dates, the earliest Germanic graves in and around Singidunum belonged to

foederati, those from the second half of the 5th century to the ruling people, while the 6th-century burials were again those of mercenaries. Shedding some light on murky settlement processes, these dates provide us the possibility to examine how the city and this part of limes functioned in the respective periods. In this paper we will also discuss the fortress of Ad Octavum, built eight miles down the stream from Singidunum during Justinian's rule.

10 IT TAKES A VILLAGE TO SUPPORT A FORT: CASE STUDY OF CASTRA AD FLUVIUM FRIGIDUM (MODERN AJDOVIŠČINA, SLOVENIA)

Abstract author(s): Kovacic, Ana (University of Primorska) - Stemberger Flegar, Kaja (PJP d.o.o.) - Urek, Maruša (Maruša Urek s.p.)

Abstract format: Oral

This paper addresses the nature of the settlement surrounding the fort Castra ad Fluvium Frigidum (modern Ajdoviščina, Slovenia). The fort was part of *Claustra Alpium Iuliarum* and was strategically built in the direct vicinity of the section of *Via Gemina* between *Aquileia* and *Colonia Iulia Emona*, and protected by the confluence of the *Hubelj* river and *Lokavšček* creek.

The area is probably best known as the supposed location of the battle of Roman emperor Theodosius the Great and the army of Augustus Eugenius in AD 394, but it was settled much earlier. In the last days of the Republic or the early days of the Roman Imperium, Roman expansionistic strategy turned its focus to the territory of modern Slovenia. After the annexation of the area and the construction of the road in the Augustan period, a coach station was built on the way from *Aquileia* and *Emona*. Next to the station, a settlement gradually developed. Together, they were initially known as *Fluvio Frigido* and later as *Mutatio Castra*, as indicated in several Roman itineraries and other ancient written sources. Sometime between AD 270 and AD 290, the settlement was partially demolished and the fortress *Castra* was built.

We argue that the settlement initially grew around the coach station during the *Pax Romana*. But with changing politics, the gradual decline of towns towards the East, and the contemporary construction of the fort, the settlement shifted to supporting the military garrison that was most likely permanently stationed in the fort.

456 SAME BUT DIFFERENT: IMITATIONS IN THE ARCHAEOLOGICAL RECORD

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Kogalniceanu, Raluca (Vasile Pârvan Institute of Archaeology; Institute of Bioarchaeological and Ethnocultural Research, Chişinău) - Gaydarska, Bisserka (Durham University)

Session format: Regular session

In archaeology, imitations can be discussed from various angles. Most often the discussions are framed either as imitations vs. imports (with impact on discussions about chronology) or as imitations in the context of new materials and technologies. Although these two approaches are extremely interesting, imitations in archaeological record can be a much more versatile topic.

What if neither the materials, nor the technologies involved are new? What about the imitations inside the same cultural and/or chronological framework? What does this type of imitation tell us? Can we always say which is the model and which is the copy? Are imitations copies or fakes of the time? Can miniaturization be considered a type of imitation? Do imitations fulfill a functional or a symbolic role?

In short, we identified so far:

- imitations that preserve the functional role (e.g. marble vs. Spondylus beads and bracelets, deer canine beads vs. their correspondent in other materials, stone/obsidian blades vs. flint ones, etc.) and others that are merely symbolic, such as dummy stone axes in graves (stones imitating the shape of an axe)
- imitations at the same scale, but in different materials (marble vs. Spondylus beads and bracelets, deer canine beads vs. their correspondent in other materials, stone/obsidian blades vs. flint ones)
- imitations at a smaller scale in the same (such as miniature vessels) or in different material (such as miniature houses, stools, etc., figurines); can we look at these last examples as imitations of reality?

Starting with cases from the archaeological record, we would like to expand the discussion beyond the surface, and to look at what can be defined as imitation and why, and also for the reasons and purposes that led to the existence of particular cases of imitations. We invite contributions from all periods and areas across Europe.

1 IMITATING WHAT HAS BEEN LEARNED? THE POSSIBLE REFERENCE MODELS OF PRE-MAGDALENIAN ROCK AND PORTABLE ART

Abstract author(s): García-Bustos, Miguel - Rivero, Olivia (Universidad de Salamanca) - García Bustos, Paula (Universitat de Barcelona)

Abstract format: Oral

Palaeolithic art was a symbolic and communicative resource that certainly played an important role among hunter-gatherer groups. The fact that there was an apprenticeship to carry out this activity highlights the importance of this type of cultural manifestation. The transmission of knowledge and, therefore, imitation results in somewhat standardised samples. Apprenticeship in Palaeolithic art has been approached mainly from the technical point of view of the works of art, especially engraving. However, there are increasingly more different points of view from which it is possible to study it. In this work we have carried out a case study focused on the head of pre-Magdalenian horses (38000-14500 BP) using geometric morphometry. The aim is to try to synthesise the models that artists could imitate in order to carry out their creative activity. The corpus studied comprises tracings of 298 graphic units of rock and portable art from the Iberian Peninsula and France, both engraved and painted. Subsequently, different statistical analyses have been applied, from which a minimum of four types of equine heads have been differentiated. In addition, the variables that most characterise each model were analysed in depth. Finally, another series of statistical analyses (MANOVA and Discriminant Analysis) were used to corroborate the significant difference between the models found. These results show that the proposed methodology is an objective way of demonstrating the imitation of type-models in art that may have been transmitted from generation to generation during the pre-Magdalenian period.

2 MESOLITHIC IMITATIONS OF SLOTTED POINTS FROM THE EASTERN BALTIC - ART, SPECIAL OBJECTS, OR ORDINARY IMPLEMENTS?

Abstract author(s): Jonuks, Tõnno (Estonian Literary Museum) - Chen, Shidong - Kriiska, Aivar (University of Tartu) - Malyutina, Anna (Independent researcher) - Oras, Ester (University of Tartu) - Presslee, Sam (University of York) - Uueni, Andres (Estonian Academy of Arts) - Vahur, Signe (University of Tartu)

Abstract format: Oral

Across the Eastern Baltic countries, Mesolithic imitations of slotted points in bone have been found. The most flawless example has been found from the River Pärnu in SW Estonia and recently dated to 8800-8550 cal BC. This imitates a slotted point, possibly used as an arrow-head, in great detail – the form of the object copies actual slotted points with carefully carved “insets” and the object demonstrates how people themselves in Early Mesolithic saw such implements. The broken tip signals that the point has been used as any other bone point but microscopic red dots on the surface suggest that the point could have been originally tinted with red ochre and thus could have had a special meaning.

This presentation summarises images of slotted points from the Eastern Baltic and addresses several questions about the purposes of such replicas. Why to prepare replicas of slotted points at the high time of slotted technology in this region? Were these ordinary arrowheads or rather some kind of special objects? Does imitation change the essence of an object? Or perhaps, they were all equal to “real” slotted points and its only us, 21st century scholars, who seek a sharp difference between the original and the mimicry?

3 TEETH OF SHELL, FISH OF ANTLER: IMITATION AND SKEUOMORPHISM IN GREEK NEOLITHIC PERSONAL ADORNMENT

Abstract author(s): Ifantidis, Fotis (University of the Aegean)

Abstract format: Oral

Ornaments, per se artifacts meant to be physically intertwined with bodies, assemble a multitude of meanings through their form and material manipulation. Moreover, their heavy use, re-use and alteration is inscribed in many examples both in the Greek Neolithic corpora, as elsewhere.

Although instances of skeuomorphic and imitation practices in jewelry are not always easily discernable (or are biased by our own preconceptions), they do provide valuable insight into the hybrid nature of ornaments as symbolic tools of personal and/or communal manifestations.

In this paper, an attempt is made to discuss the data related to the processes of imitation and skeuomorphism, as witnessed in the Greek Neolithic personal adornment corpora. A review of examples that embody these characteristics will be conducted, with a special focus on the assemblage deriving from the lakeside settlement of Dispilio: shell

bracelets altered into pendants in the form of teeth, stone bracelets carved in the form of shell ones, antler pendants imitating fish, etc.

4 **SAME, BUT DIFFERENT. IMITATIONS FROM A LATE NEOLITHIC CEMETERY IN A LARGER CONTEXT**

Abstract author(s): Kogalniceanu, Raluca (Institute of Archaeology, Bucharest; Institute of Bioarchaeological and Ethnocultural Research, Chisinau)

Abstract format: Oral

During the work on materials from the Late Neolithic Hamangia cemetery at Cernavodă (south-east Romania, on the bank of the Danube), I started noticing “doubles” of various artefacts. First, it was the jewelry (Spondylus and marble bracelets and beads) and the clothing accessories (beads and buttons). Then, it was when some item illustrated something that already existed in the same material or in a different one (a fang or claw made of Spondylus, or something that looked like an axe but was not an axe). Then, it was the pottery: from extremely large vessels to extremely small one, some of the shapes plus associated decoration crossed size boundary from one extreme to the other. In the end, several categories could be identified: imitations that preserve the functional role vs. others that are merely symbolic, imitations at the same scale, but in different materials vs. imitations at a smaller scale in the same or in different material. A series of questions immediately arose: which ones can we really call imitations, and are they specific only to the funerary areas or also to the domestic ones? An attempt will be made to answer these questions and to expand the discussion to the possible reasons and purposes that led to the existence of particular cases.

5 **“CASTING-SEAM IMITATIONS” ON BATTLE AXES IN NORTH-WESTERN CENTRAL EUROPE IN THE FUNNEL BEAKER CULTURE**

Abstract author(s): Schultrich, Sebastian (Institut fuer Ur- und Fruehgeschichte Kiel)

Abstract format: Oral

Many ground stone hammer axes of the Final Neolithic (FN) Corded Ware Culture (CWC) possess a plastic ledge centrally over the entire top side, which scholars often term as casting-seam imitations. A potential role model for the stone axes in general (and thus, the casting seam) is the so-called Eschollbrücken copper axe.

So far, no one has recognised a potential Late Neolithic (LN) origin for potential casting seam imitations. Recent studies on the date of stone and copper battle axes from the Netherlands and north-western Germany add important observations for re-accessing the FN casting seams. We can now trace the cradle for this morphological feature back to the LN Funnel Beaker Culture. Thus, I propose that the FN version is not more than a rudiment of an older tradition.

Often, scholars regard stone axes as imitations of copper originals. However, by evaluating this issue from a long-term perspective, we have to question this notion. Probably, stone and copper are different articulations of the same idea.

6 **THE ROMAN PROVINCIAL COINAGE IN MOESIA INFERIOR PROVINCE BETWEEN THE GREEK TRADITION AND THE IMITATION OF THE ROMAN ICONOGRAPHIC TYPES**

Abstract author(s): Iacob, Mihaela (“Dunarea de Jos” University of Galati; ISACCL Bucharest)

Abstract format: Oral

The monetary activity of the provincial Roman type took place in the province of Moesia Inferior in the period between the reign of Augustus and Gallienus. The 7 Moesian provincial monetary workshops are differentiated by the volume of production, by the period and constant activity of production, but also by the adopted iconographic repertoire.

Some of the workshops of the province, such as Istros, Kallatis, Odessos, Dionysopolis, remain a tribute to the Greek tradition, featuring on the reverse Greek subjects, divinities or iconographic themes - a natural thing in the conditions because these are former Greek colonies; the other three workshops - Tomis (ancient Greek city), Nikopolis pro Istron and Markianopolis - cities founded by Trajan in a Hellenophone environment - are much more likely to adopt themes and subjects typical of Roman imperial coinage such as the representation of the goddess Roma, the emperor or members of the imperial family and, above all, of personified abstractions such as: FORTUNA-TYCHE, CONCORDIA-HOMONOIA, VICTORIA-NIKE, NEMESIS/NEMESIS-AEQVITAS, AEQVITAS, BONVS EVENTVS, LIBERALITAS, VIRTVS, ABVNDANTIA, FELICITAS. Are these subjects an exact transposition (a copy) of the iconographic types from the Roman imperial monetary iconography in the Roman provincial monetary of Moesia Inferior or are they local interpretations of this types? - this is the question that the author tries to answer in the communication (poster) that will be presented at the EAA congress.

458 INTERTWINED TECHNOLOGIES IN PREHISTORIC EUROPE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Bekiaris, Tasos - Dimoula, Anastasia (Aristotle University of Thessaloniki) - Kloukinas, Dimitris (Ministry of Culture and Sports) - Koutsopoulou, Eleni (University of Bern)

Session format: Regular session

The chaîne opératoire concept has offered a powerful methodological tool for the analysis of prehistoric technologies. Similar sequential models and biographical approaches have been employed for exploring technological products and associated practices. These are largely characterised by linearity and they commonly focus on individual material classes. The ways in which different crafts, materials and practices are linked to each other have not attracted the lion's share of attention, even when recent approaches are more holistic in character. This is in stark contrast to the fact that prehistoric technologies were rarely performed in isolation. The very concept of technology provides the framework for dynamic social interactions to unfold. Prehistoric settings (i.e. sites, settlements, landscapes) are perceived as vibrant places, where several objects were produced, consumed and disposed, and various crafts were practiced together, forming networks of technological and social interaction.

The main aim of the session is to move beyond the study of individual material classes and towards their joint and comparative analyses, so as to more efficiently approach the fundamentals and the specifics of prehistoric technical regimes. It is to merge the technological analyses of different materials and practices (e.g. stone tools, pottery, bone implements, earthen structures, agricultural and husbandry practices, technologies of death etc.), and to shed light on the various ways in which taskscapes, technical choices, embodied skills, mental operations and dispositions intertwine.

We welcome contributions that investigate technological interconnections between crafts and across various stages of their production sequences, as well as their consumption, use, discard and deposition. A further objective is to draw attention to the spatiality and temporality of technological practice. The spatial aspect refers both to settlement space and to the wider landscape, while the temporal aspect refers, for instance, to the dominant forms of social time (e.g. the agricultural cycle) and seasonality.

ABSTRACTS

1 FEEDING THE CLAY: WHERE PLANT MANAGEMENT AND CLAY TECHNOLOGIES CONVERGE

Abstract author(s): Papadakou, Trisevgeni (Aristotle University of Thessaloniki; International Hellenic University)

Abstract format: Oral

It has long been noted that the early ceramic vessels in SW Asia and SE Europe, were consistently made with organic temper of vegetal origin. Although there has been much speculation around the source of this temper, it was only recently that analytical work was undertaken to connect pottery making with other domains of the Neolithic reality.

The inconspicuous, and few, organic-tempered of the Early Neolithic of northern Greece provided a fruitful field to examine the botanical composition of the temper, intentionally mixed with the clay, with microscopy techniques and make inferences on the activities this temper was derived from. Even though these vessels are not morphologically different to the non-tempered ones, the difference in their construction is marked: the temper needs to be acquired, processed, and mixed, thus inserting new stages in the pottery construction. After firing, the remains of these materials are permanently incorporated into this new and synthetic artefact, imbuing it with synecdochical significations.

A number of activities were indeed recognized, with various degrees of certainty and overlapping, suggesting a potential conceptual relationship between this clay technology and other domains, most notably food preparation. It is argued that this incorporation of the plant world into pottery concerns primarily the material metaphor both in the performative act of making and in the solid, permanent end-product, that can be viewed as stored memory.

2 TECHNOLOGIES AND TRADITIONS OF POTTERY AND PLASTER PRODUCTION AT NEOLITHIC MAKRI, THRACE, GREECE

Abstract author(s): Barouda, Archontoula - Quinn, Patrick (University College London - UCL) - Efstratiou, Nikos (Aristotle University of Thessaloniki)

Abstract format: Oral

As part of the Marie Skłodowska-Curie Innovative Training Network (PlaCe), this doctoral research project aims to reconstruct the pottery and plaster technologies of Neolithic Makri in Northern Greece, the only systematically excavated prehistoric site in the region of Thrace. Many details of this coastal tell settlement have been preserved, including black-burnished pottery, stone tools, figurines, clay architecture and lime-plastered floors. This offers a

unique opportunity to examine in depth the ceramic and lithic industries of a single site, including aspects of raw material procurement and resource management, pyrotechnology, manufacturing traditions and possible cross-craft interaction. Given its location in an important contact zone between western Anatolia and the Balkans, Makri also holds significant potential to better understand the cultural development of the first Neolithic communities of south-eastern Europe and the economic and socio-political processes involved in the production of their material culture. The on-going project, now in its second year, adopts an interdisciplinary approach that combines macroscopic, microscopic and atomic perspectives and applies these alongside experimental data to reconstruct all stages in the production sequences of ceramics, plaster and earthen construction at Makri. This presentation will introduce the research, present preliminary findings and anticipate the impact of the project.

3 A TEMPORAL APPROACH OF HOUSE CONSTRUCTION IN NEOLITHIC NORTHERN GREECE

Abstract author(s): Kloukinas, Dimitris (Numismatic Museum Athens)

Abstract format: Oral

House construction is a large-scale technological enterprise, which brings together various materials, techniques, environmental stimuli, social bodies, cultural prescriptions and symbolisms. A sequential analysis of relevant technologies is not always adequate to fully grasp the complexities of the process. By paying closer attention to the temporal dimension of house building technologies, it is possible to reveal the multiple material entanglements and social dynamics involved. In addition, it is feasible to reconcile the measurable data of the technological process with the non-reducible, experienced reality of prehistoric inhabitants.

The current paper will attempt to approach the temporal and rhythmic aspects of house construction, with reference to the earthen architecture of Neolithic northern Greece. Examples from the study of fire-hardened superstructural remains from a number of sites will be presented. The main objective is to put forth the ways in which different technologies, practices and taskscapes intertwine. By doing so, the paper will highlight the various difficulties imposed when trying to meaningfully reconstruct the house building process as a whole.

4 AMIDST CLAYS AND STONES: RAW MATERIAL CHOICES AND CROSS-CRAFT INTERACTIONS IN LATE NEOLITHIC AVGI, NW GREECE

Abstract author(s): Papadias, Yannis - Saridaki, Niki - Stergiou, C.L. - Bekiaris, Tasos - Katsikaridis, Nikos (Aristotle University of Thessaloniki) - Kloukinas, Dimitris (Numismatic Museum Athens) - Kalogiropoulou, Evita (University of Crete) - Stratouli, Georgia (Ephorate of Antiquities of Kilkis)

Abstract format: Oral

During the last two decades, research at the Late Neolithic site of Avgi (Kastoria, NW Greece) has developed a multidisciplinary character. Neolithic Avgi is a dispersed settlement, with rich archaeological deposits comprising large assemblages of ground stone artifacts, and pottery, as well as remains of earthen features. This presentation will attempt a combined study of these diverse assemblages, aiming to explore the interconnectedness of technological practices, in terms of raw material acquisition, manufacture processes, and taskscapes. The main analytical tool to be applied will be thin-section petrography.

Regarding the theoretical framework, the cross-craft interaction model (CCI) will be implemented. This has been at the core of archaeological research, for the last two decades, especially for the comparative examination of ceramic, plaster, metal and stone artefacts in the context of Prehistory. In addition, the concept of *chaîne opératoire* will be employed to investigate the individual stages followed in manufacturing the material classes under investigation.

The results of this research will reveal the range of diversity in the exploitation of the geological micro-environments, the recipes, and processes followed in the manufacture of ground stones and clay-based artifacts or structures. It will therefore be possible to highlight the interplay between crafts, as well as the idiosyncratic characteristics of well-established technological traditions, in the Neolithic community of Avgi.

5 OCHRE CHÂÎNES OPÉRATOIRES IN NEOLITHIC GREECE: THE CASE OF KREMASTI-KILADA

Abstract author(s): Stroulia, Anna (University of Southern Indiana) - Robitaille, Jérôme (Laboratory for Traceology and Controlled Experiments - TraCEr, MONREPOS) - Chondrogianni-Metoki, Areti (Kozani Ephorate of Antiquities) - Melfos, Vasilios - Kantiranis, Nikolaos (Aristotle University of Thessaloniki) - Dubreuil, Laure (Trent University) - Silva, Teresa (Democritus University of Thrace) - Saridaki, Niki (Aristotle University of Thessaloniki) - Urem-Kotsou, Dushka (Democritus University of Thrace)

Abstract format: Oral

While ochre had been exploited in the Aegean since the Upper Paleolithic period, its use became more substantial and diverse during the Neolithic. The evidence comes in several forms: decoration on a variety of artifactual types such as pottery; red-stained tools and containers; red-colored wall plasters; ochre powder contained in vessels; a locus of

mining activity; deliberately shaped ochre artifacts; solid pieces of ochre. It is the last category that we discuss in this paper using the assemblage from the site of Kremasti-Kilada as our case study.

Located in the region of Kozani in northern Greece, Kremasti was occupied from c. 5340 to 4800 BC. Extensive salvage excavations uncovered a large number of subsurface features: over 450 pits, 7 ditches arranged in a T-shape, and 23 cremation burials. All features are adjacent to a low tell. The latter has not been excavated, but diagnostic finds from surface survey and limited testing indicate that it is contemporary with the above features. As such, it is assumed to represent the settlement with which these features are associated.

Among the thousands of stone finds uncovered at the site are roughly 80 pieces of ochre, not all of which bear traces of use. This number is not particularly high, yet this is the largest assemblage known from Neolithic Greece. Our paper explores the ochre chaînes opératoires at Kremasti by integrating macroscopic, geochemical, and use wear examination, experimental work, ethnographic observations, contextual analysis, as well as a discussion of the surfaces and objects on which ochre was processed or applied. In addition, we make comparisons with other assemblages in the same region and elsewhere, placing the Kremasti material in its wider Aegean Neolithic context.

6 TECHNOLOGIES BY THE LAKE: RECONSTRUCTING THE MANUFACTURE SEQUENCES OF GROUND STONE CELTS FROM LATE NEOLITHIC DISPILIO, NW GREECE

Abstract author(s): Bekiaris, Tasos (Aristotle University of Thessaloniki) - Stratouli, Georgia (Ephorate of Antiquities of Kilkis) - Kotsakis, Konstantinos (Aristotle University of Thessaloniki)

Abstract format: Oral

Excavations on the Late Neolithic lake site of Dispilio (circa 5600-3500 cal BC), in the region of Kastoria, NW Greece, brought to light an impressive assemblage of nearly 3000 macrolithic artefacts. Among other types, the assemblage includes a large number of finished cutting-edge tools (known as celts), but also hundreds of unmodified raw materials, pre-shaped blanks, roughouts, and other debitage (e.g., remodified tools, flakes). The substantial quantities of the unfinished edge tools and the finished implements imply that Neolithic Dispilio was the locus of systematic production and maintenance of such implements. Neolithic Dispilio, is so far the only neolithic site in Greece that has procured ophiolitic raw materials (serpentinites, peridotites, gabbros), used in celt production, from a primary outcrop, a quarry, instead of secondary sources, such as riverbeds and streams. This choice seems to have affected the manufacturing processes, the applied techniques and led to the development of certain technical skills and dexterities.

The presentation focuses on the analysis of the ophiolitic debitage from Neolithic Dispilio, associated with the production of cutting tools. It seeks to reconstruct the chaîne opératoires of these implements and highlight the technical choices, taken or omitted, during the production sequences by their makers. It will also explore the technical interconnections of celt production with other macrolithic implements, such as abraders, polishing tools, hammers, stone saws and stone drills, that were actively involved in various stages of their production, maintenance, and reshaping. The study is conducted within the context of the ERC Program EXPLO.

7 CAPTURING THE MOMENT: PRACTICES AND CHIPPED STONE TOOLS AT THE NEOLITHIC SITE OF DISPILIO

Abstract author(s): Kita, Angeliki (Aristotle University of Thessaloniki) - Milić, Bogdana (Archaeology of Social Dynamics Research group. Milà i Fontanals Institution. Spanish National Research Council) - Gibaja, Juan (Milà i Fontanals Institution. Spanish National Research Council, InDi Group) - Kotsakis, Kostas (Aristotle University of Thessaloniki)

Abstract format: Oral

Dispilio is a Neolithic lakeside settlement in north-western Greece. According to extensive archaeological research, the site was used since the end of the Middle Neolithic (ca. 5600 BC) until the Late Bronze Age (ca. 1200 BC). Insights to the everyday life of the Neolithic inhabitants was previously obtained primarily from the studies of uncovered built environment and various find categories, of which some are currently being newly analysed.

The EXPLO project (ERC Synergy grant) investigates the interaction between past human ways of life, land use and the wider environment in archaeological sites in lakes on the southern Balkans, and includes Dispilio as one of the key case-studies. In this project framework, the site's collection of around 2000 chipped stone artifacts has been studied so far, focusing on the carefully chosen contexts from the Eastern and Western Sectors. Our first results suggest that there are different patterns in the production and consumption of tools, concerning the forms of local production which outlines a special character regarding knapping techniques, but also largely contrasts other elements in the chipped stone's technology and their potential function.

In this paper we intend to address the relation between the abundance of analyzed artifacts and the Neolithic inhabitants' behaviours, by focusing on social practices and specific moments related to making and use of chipped stones.

In this approach we look at how raw materials, tools and people provide us with intertwined meanings by outlining obtained results from in-depth studies of technological features and additional use-wear analyses, which also reveal how chipped stone tools are interconnected with space, plants, animals, pottery or other materials and synthesise episodes of production or use, in the context of the Neolithic from the second part of the 6th millennium BC onwards.

8 THE TECHNOLOGY OF FIRE IN PREHISTORIC AEGEAN: RETRACING THE CHAÎNE OPERATOIRE OF FIRE-INDUCED MANIPULATION OF HUMAN REMAINS

Abstract author(s): Papakonstantinou, Niki (Department of History and Archaeology, Aristotle University of Thessaloniki; Fitch Laboratory, British School at Athens) - Chatzikonstantinou, Ioannis - Papathanasiou, Vasiliki - Kiorpe, Sotiria - Triantaphyllou, Sevasti (Department of History and Archaeology, Aristotle University of Thessaloniki)

Abstract format: Oral

The use of fire on human remains is one of the most potent techniques for transforming the remains of the deceased and facilitating their fragmentation without destroying them completely. The act of body exposure to fire, either as intentional combustion of the human corpse or in the form of burning fleshed, defleshed or skeletonized remains, involves a complex suite of activities and operational chain of gestures, as well as a wide sequence and range of choices made at all stages of this process. In this sense, the practice of cremation and fire related funerary practices can be viewed in terms of a chaîne opératoire. Geographical and chronological variation in this multi-leveled procedure may reflect different social behaviors and the living communities' ideological and cosmological attitudes to the human body.

In this paper the technology of the use of fire on human bones in prehistoric Aegean will be discussed. We will present some preliminary results from the ongoing research implemented in the framework of the research program of TEFRA funded by the Hellenic Foundation of Research and Innovation (H.F.R.I.). It will be demonstrated that through a multidisciplinary approach on the effect of fire on the human body, combining different methodological tools (published excavation data, macroscopic, microscopic and analytical methods, experimental research) it is possible to gain considerable insight into the technology of fire on human remains, reconstruct the chaîne opératoire of fire-induced manipulation of the body and overview its regional and chronological variation.

9 SHOW ME YOUR METALLURGIST AND I'LL TELL YOU WHO YOU ARE: SECONDARY METALLURGICAL PRODUCTION IN THE EARLY BRONZE AGE AEGEAN

Abstract author(s): Giannakopoulou, Magda (National and Kapodistrian University of Athens; NSRF Demokritos)

Abstract format: Oral

Metallurgical production has played a prominent role in the development of the Early Bronze Age Aegean societies, being connected to economic development and social complexity. This study focusing on the Aegean world, including Crete, Cyclades, Attica and North Aegean Islands and on the production of copper, comes to fill a gap in the Aegean archaeometallurgical studies which have been focused on the primary production.

The Early Bronze Age Aegean sites with evidence of secondary production are Ayia Photia, Poros-Katsambas, Daskalio, Kastri, Ayia Irini, Raphina, Poliochni, Thermi, Ayios Antonios Potou and Skala Sotiros. They are all settlements in strategic locations within the trade routes, close to safe harbours. Secondary production is separated from primary, which is usually conducted in remote areas, close to the ore deposits, away from settlements. Exception to this are Daskalio, Raphina and Ayios Antonios Potou. However, in the first two cases there is a separation between the two parts of the production, with the secondary being the one conducted within the settlement. The enclosure of secondary production in settlements could be the result of the different operational and technological necessities between the two stages. At the same time, though, its location in visible areas, close to the entrance of the sites, could indicate the importance of this part of the production in forming the identity of the craftsman and establishing the settlement as a metallurgical centre.

10 MULTICRAFTING IN HOUSES AT LATE BRONZE AGE AYIA IRINI, KEA (CYCLADES, GREECE)

Abstract author(s): Baxley Craig, Jami (Florida State University) - Abell, Natalie (University of Michigan Ann Arbor)

Abstract format: Oral

In the Late Bronze Age (LBA) southern Aegean (ca. 1600-1400 BCE), there is abundant evidence for specialized craft production based in houses, especially on Crete and in the Cycladic islands. This paper focuses on the site of Ayia Irini on the island of Kea, where most houses preserve evidence for the production of one or more crafts. We examine the distribution patterns of craft tools and production debris across houses at the site over the course of the earlier LBA, in order to evaluate how the labor and knowhow of local craft producers involved in different kinds of crafts may have intersected. We explore how these patterns of production shifted during a time of major socioeconomic and

material culture change in the insular and southern Aegean, often referred to as the era of “Minoanization.” This study contributes to broader discussions concerning communities of practice and their intersection within multicrafting households, where different members may be knowledgeable about materials, tools, and chaînes opératoires associated with several different kinds of crafts.

A. RESILIENCE AND INNOVATION IN CRAFT KNOWLEDGE DURING HORIZONS OF EXCEPTIONAL SOCIETAL CHANGE IN THE BRONZE AGE CARPATHIAN BASIN

Abstract author(s): Brown, Lauren (University College Dublin, School of Archaeology)

Abstract format: Poster

This PhD aims to investigate the resilience of knowledge through a horizon of exceptional social change. This will be done through the comparison of identity, social, political, and economic organization identified in the material evidence of bronze production and settlement remains between the Middle and Late Bronze Ages in the Carpathian Basin. This transition was chosen because of total shift in settlement organization exhibited, the availability of materials, and lack of significant study of the material culture pre- and posttransition. This work utilizes the novel combination of archaeometric, petrographic, and experimental archaeological methods to create a holistic model of technical knowledge and choice in the chaîne opératoire of bronze objects of these two periods. A georeferenced database of all Middle Bronze Age settlements with evidence of bronze production will be created based on Găvan’s 2015 PhD. This data set will be compared a data set of Late Bronze Age settlements with bronze production evidence assembled as part of this work.

Access to the excavation reports and assemblages of the Middle Bronze Age sites of Feudvar, Rabe, and Pecica, and the Late Bronze Age site of Şagu will allow the analysis of technical ceramics and bronze objects to identify the material make up and bronze production process. Changes in settlement structure and layout will provide insight into social change. Through this analysis the evolution, innovation, invention, and loss of technological knowledge and choice will be discussed. This information, combined with settlement information, will be used in the experimental ‘recreation’ of bronze production to identify cognitive, spatial, and sensory aspects not seen through traditional archaeological analysis, but that are essential to understand the intentions of our ancestors. The conclusions of this research may also be used to discuss modern day social shifts and the retention, loss, or transition of social organization.

B. SMOKE ON THE WATER: BURNT MOUNDS AND THEIR CERAMIC EVIDENCE IN BRITAIN

Abstract author(s): Fitzgerald, Nick (University of Bristol)

Abstract format: Poster

Burnt mounds are a common prehistoric feature found in Britain and Ireland. Their function is currently unresolved, and their role within society is also an unknown quantity. This thesis will explore the burnt mound phenomenon and their social and technological role through their physical characteristics and material remains. The primary methods used to explore these questions will be threefold. The first will be the construction of a geospatial database, to explore location, excavation status, morphology, proximity to geographical features and other contemporary or then-historical activity, finds, structures and palaeoenvironmental data such as palynology to elucidate possible patterns and connections between sites. The second will be the use of organic residue analysis to reconstruct specific instances of activities taking place at burnt mounds and associated settlements. Finally, the use of experimental archaeology will help to clarify both the results from residue analysis and to help investigate hypotheses around burnt mound use.

465 LARGE QUANTITIES OF SCIENTIFIC DATA: STEPPING STONES FOR INTERDISCIPLINARY RESEARCH IN ARCHAEOLOGY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Kolar, Jan (Institute of Archaeology, University College London) - Reiter, Samatha (National Museum of Denmark) - Sabatini, Serena (Department of Historical Studies, University of Gothenburg) - Staniuk, Robert (Institute of Archaeology, University College London)

Session format: Regular session

Higher amounts of scientific data about the human past justify the pursuit of more complex models of past processes and events. This is a driver for archaeology to become increasingly interdisciplinary—to analyze, synthesize and harmonize theoretical approaches, methods and data from diverse (sub)disciplines into a cohesive whole. This session invites papers which address the application of large quantities of diverse data for model building (especially diachronic macro-scale) and other interdisciplinary investigations. Research questions to be addressed include:

- What new perspectives can emerge from the integration of large and highly diverse datasets?
- What new models of the past are only explorable by means of interdisciplinarity and large datasets?

- Which case studies exemplify synthesis through interdisciplinary collaboration?

This session invites papers which move beyond the standardization of recording to analyze multiple data types in an interdisciplinary fashion—drawing inspiration and inference from different disciplines (archaeology, archaeogenetics, palaeoecology, archaeometry, environmental archaeology, ecology etc.) to create new knowledge that is greater than the sum of its parts. We would like to invite speakers dealing routinely with large datasets covering large areas and taking a long-term perspective over millennia. We also welcome papers which present new theoretical approaches which unify diverse disciplines into new and cutting-edge modes of model-building, database construction and/or interpretation.

ABSTRACTS

1 DAIRYING, DISEASES AND THE EVOLUTION OF LACTASE PERSISTENCE IN EUROPE

Abstract author(s): Thomas, Mark (University College London, Research Dept Of Genetics, Evolution And Environment)

Abstract format: Oral

In European and many African, Middle Eastern and southern Asian populations, lactase persistence (LP) is the most advantageous monogenic trait to have evolved over the past 10,000 years. Although natural selection on LP and the consumption of prehistoric milk must be linked, considerable uncertainty remains concerning their spatiotemporal configuration and specific interactions. Here we provide detailed distributions of milk exploitation across Europe over the past 9,000 years using around 7,000 pottery fat residues from more than 550 archaeological sites. European milk use was widespread from the Neolithic period onwards but varied spatially and temporally in intensity. Notably, LP selection varying with levels of prehistoric milk exploitation is no better at explaining LP allele frequency trajectories than uniform selection since the Neolithic period. In the UK Biobank cohort of 500,000 contemporary Europeans, LP genotype was only weakly associated with milk consumption and did not show consistent associations with improved fitness or health indicators. This suggests that other reasons for the beneficial effects of LP should be considered for its rapid frequency increase. We propose that lactase non-persistent individuals consumed milk when it became available but, under conditions of famine and/or increased pathogen exposure, this was disadvantageous, driving LP selection in prehistoric Europe. Comparison of model likelihoods indicates that population fluctuations, settlement density and wild animal exploitation—proxies for these drivers—provide better explanations of LP selection than the extent of milk exploitation. These findings offer new perspectives on prehistoric milk exploitation and LP evolution.

2 AN INTERDISCIPLINARY ANALYSIS OF THE DRIVERS AND CONSEQUENCES OF HUMAN MOBILITY CHANGES DURING THE WEST EURASIAN HOLOCENE

Abstract author(s): Canteri, Elisabetta (Section for Molecular Ecology and Evolution, Globe Institute, Faculty of Health and Medical Sciences, University of Copenhagen) - Speciale, Claudia (IPHES - Catalan Institute of Human Palaeoecology and Social Evolution; Department of Historical Studies, University of Gothenburg) - Riabogina, Natalia - Bulatovic, Jelena (Department of Historical Studies, University of Gothenburg) - Timpson, Adrian - Thomas, Mark (UCL Genetics Institute, Department of Genetics, Evolution and Environment, University College London) - Shennan, Stephen (UCL Institute of Archaeology, University College London) - Kristiansen, Kristian (Department of Historical Studies, University of Gothenburg) - Woodbridge, Jessie (School of Geography, Earth and Environmental Sciences, University of Plymouth) - Racimo, Fernando (Section for Molecular Ecology and Evolution, Globe Institute, Faculty of Health and Medical Sciences, University of Copenhagen)

Abstract format: Oral

Human history is intimately tied to the environment in which it takes place. Humans modify the biomes they occupy, and in turn, biotic and climatic processes determine how humans organise their livelihoods. Thus, a complete view of human history can only be obtained via interdisciplinary research, unifying data across disparate fields, including archaeology, genetics, and ecology. An interdisciplinary approach can thus help us understand how demographic, social, cultural, ecological and evolutionary processes unfolded and influenced each other in space and time. Here, we aimed to take an interdisciplinary approach to the Neolithic and Bronze Age transitions in Western Europe - periods characterised by major movements of peoples across vast regions of Eurasia, and the concurrent spread of various agricultural and husbandry techniques. We combined more than 6000 archaeobotanical and archaeozoological records, as well as over 2600 ancient human genomes, together with human mobility estimates, and paleovegetation reconstructions into a comprehensive database of human prehistorical and historical records (BIAD), covering vast areas across West Eurasia. We used this database to explore the spatiotemporal relationships between human movements and landscape composition, with a specific focus on the effects of the expansion of domestication and cultivation of animals and crops. By co-analyzing these disparate sources of data, we are able to obtain a comprehensive picture

of the drivers and consequences of changes in human mobility, faunal and floral composition on the West Eurasian landscape over the past 10,000 years.

3 FLUVIAL FORCES AND A NETWORK OF TIME

Abstract author(s): Schjerven, Nicoline (University of Gothenburg) - Reiter, Samantha (National Museum of Denmark)

Abstract format: Oral

River systems have long played important roles in human mobility and connectivity, and certainly played a major part in prehistory as well. In addition to being a crucial resource, certain of them were and remain highways for trade, transport, alliances and kinship networks, while others acted as barriers. Though archaeological discussions of connectivity are often limited to monothematic presentations of a single data type through a 'dots-on-maps' approach, increasing advances in both theory and formal network analysis offer new opportunities to refine and test the connectivity paradigm. In this paper, we make a preliminary case study of the river Rhine through a re-presentation of this major European thoroughfare and the Neolithic and Bronze Age sites along its banks. Our new map focuses particularly on the settlements and potential waystations for river travelers. Through estimation of travel times from dynamic interplay and ethnography, we map the Rhine not in relation to artificial projection systems, but rather as closer to the way prehistoric people were likely to have understood it: in relation to the natural and experienced properties of the landscape.

Given the increasing density of isotopic, aDNA and radiocarbon data, we can begin to ask new questions of prehistoric networks, such as river systems like that of the Rhine. We can ask not only about whether there were flows of people, ideas and things, but what those flows looked like and how long they took. By juxtaposing our travel time estimates with mobility data (such as $^{87}/^{86}\text{Sr}$), we have an initial assay into how the ancient Rhine may have been connected and provide a new forward-thinking perspective on space and time in prehistory which contributes to our growing knowledge of human spatial behavior.

4 A SPATIOTEMPORAL CLUSTERING/ANTICLUSTERING ALGORITHM FOR LOCAL TIME-SERIES ANALYSIS OF ARCHAEOLOGICAL AND GENETIC DATA

Abstract author(s): Lee, Victor Yan Kin (Section for Molecular Ecology and Evolution, Globe Institute, Faculty of Health and Medical Sciences, University of Copenhagen) - Timpson, Adrian (UCL Genetics Institute, Department of Genetics, Evolution and Environment, University College London) - Kolar, Jan - Staniuk, Robert - Shennan, Stephen (UCL Institute of Archaeology, University College London) - Thomas, Mark (UCL Genetics Institute, Department of Genetics, Evolution and Environment, University College London) - Racimo, Fernando (Section for Molecular Ecology and Evolution, Globe Institute, Faculty of Health and Medical Sciences, University of Copenhagen)

Abstract format: Oral

Human history is characterized by intertwined cultural, ecological and biological processes. To understand these processes, it is often necessary to discretize space and time in order to compare and contrast them across different periods and/or regions of the world. However, aggregation of archaeological and biological data into analytically comparable spatiotemporal groupings is far from straightforward. The general approach in archaeology is to group observations into archaeological cultures based on the similarity of discovery circumstances, such as proximity, material culture and stratigraphy. Depending on the type of discretization used, archaeological cultures could have various definitions which do not lend themselves naturally to a comparative analysis with other types of datasets (e.g. genetic information).

Here, we propose a novel spatiotemporal clustering algorithm designed for local time-series analysis that aims to aggregate data points in an automated manner, driven by the distribution of the data itself. The algorithm is characterized by a combined clustering/anticlustering approach, which searches for an optimal division of space-time based on input requirements by the user. In our specific case, we analyzed time-series data in different geographical regions. In this way, our current implementation works by seeking to minimize within-group variance in spatial locations, and maximize between-group variance (clustering), while - at the same time - maximizing within-group variance in temporal dates (anticlustering). We have applied this algorithm to the newly-created Big Interdisciplinary Archaeological Database (BIAD) with records spanning the European Neolithic, Bronze Age and Iron Age, enabling us to jointly compare and contrast evolutionary and cultural processes in different regions of Western Eurasia. We expect our method to be widely applicable to archaeo-scientists aiming to model different types of ancient datasets in a statistically explicit and reproducible manner, allowing for more rigorous interdisciplinary studies of the past.

5 TOWARDS LONG-TERM PATTERNS OF CULTURAL VARIABILITY – STRUCTURED DATASETS, MORTUARY PRACTICES, AND MOBILITY OF PREHISTORIC POPULATION

Abstract author(s): Staniuk, Robert - Shennan, Stephen (Institute of Archaeology UCL) - Timpson, Adrian - Thomas, Mark (UCL Research Department of Genetics, Evolution and Environment) - Reiter, Samantha (National Museum of Denmark) - Kolář, Jan (Institute of Archaeology UCL)

Abstract format: Oral

Archaeological approaches to studies of variability in mortuary practices have generally focused on discrete contexts associated with specific communities. These approaches tend to amplify cross-cultural differentiation in order to document historically-unique communities in a specific spatio-temporal setting. In this sense, variability is not a characteristic of human culture in flux but an exploration of the possibilities available to a specific group of people.

Attempts at rectifying this problem in the past were often hindered by the decentralized state of mortuary datasets specific to certain periods or regions. The solution in such studies was to examine the replacement of single cultural traits (such as flat graves) with e.g. burial mounds in the 3rd millennium BCE or cremation in the 2nd millennium BCE. Rather than enhancing our understanding of changes in variability, they emphasize the significance of binary, transformative changes.

If we want to understand large-scale changes in prehistory, we first need to be able to conceptualize changes in variability. As such, this paper focusses on three areas:

- (1) presenting the mortuary data stored in the Big Interdisciplinary Archaeological Database (BIAD),
- (2) discussing the first results of analyzing cultural variability in mortuary practices across prehistoric Europe (6000-1000 BCE), and
- (3) correlating the variability of mortuary practices with mobility patterns documented by aDNA studies (Loog et al., 2017).

- Loog, L., Mirazón Lahr, M., Kovacevic, M., Manica, A., Eriksson, A., Thomas, M.G., 2017. Estimating mobility using sparse data: Application to human genetic variation. *Proceedings of the National Academy of Sciences* 114, 12213–12218.

6 ANCIENT ENVIRONMENTAL DNA FROM NEOLITHIC AND BRONZE AGE CONTEXT; PRELIMINARY RESULTS FROM THE COREX COLLABORATION

Abstract author(s): Ruter, Anthony (Globe Institute, Section for GeoGenetics)

Abstract format: Oral

In the last decade, the analysis of ancient DNA recovered from the remains of humans and other mammals has revolutionized archeology. The reconstruction of nuclear and mitochondrial genomes from multiple specimens has allowed the inference of bio-ethnogenesis, drift and selection.

However, most of the DNA sequences from skeletons come from microbes that were either symbiotic or parasitic with the specimen when it was alive or from microbes that invaded post mortem from the surrounding environment, not from the specimen itself. Archaeological features like pits, latrines and accretional floors trap organic refuse, and may contain DNA from a range of organisms sharing the ancient human environment including plants, fungi and animals for which no other traces have survived. Ultimately, tracking changes in pathogens from anthrosols and the microbiomes of ancient skeletons may allow the inference of the infectious disease load through time and space.

The utility of identifying these organisms is obvious to archaeologists but it requires a new approach: ancient environmental or metagenomic DNA (eDNA), focused on the environment's metagenome rather than an individual specimen. Metagenomic analysis involves sequencing all nucleic acids in a sediment sample, which may contain billions of fragments of DNA from mixed populations of microorganisms, plants and animals, and assigning these to their reference genomes to determine which taxa were present and in which proportions.

Researchers at the Globe Institute, Section for GeoGenetics at the University of Copenhagen with collaborators in the COREX project are collecting anthropogenic sediment samples from archeological sites throughout central Europe, ranging from the early Neolithic to the Iron age. We present the preliminary results of an analysis of 80 samples from diverse contexts in 11 separate sites. These will help focus the collection and of additional samples and refine the extraction protocols for specific sediment types.

7 **RADIOCARBON DATES WITHIN THEIR ARCHAEOLOGICAL CONTEXT. HOW TO BETTER RELATE POPULATION DYNAMICS WITH ITS CAUSES AND EFFECTS**

Abstract author(s): Kolar, Jan (UCL Institute of Archaeology) - Timpson, Adrian (UCL Division of Biosciences) - Bulatović, Jelena (Department of Historical Studies, University of Gothenburg) - Speciale, Claudia (IPHES - Catalan Institute of Human Paleoeology and Social Evolution) - Ryabogina, Natalia (Department of Historical Studies, University of Gothenburg) - Staniuk, Robert - Shennan, Stephen (UCL Institute of Archaeology)

Abstract format: Oral

Archaeology currently witnesses a boom in the use of large scientific datasets (often containing tens or hundreds of thousands of records) and interdisciplinary approaches. In fact, novel narratives of the human past at diverse spatial and temporal scales cannot be achieved without such datasets and thinking out of one's disciplinary box. Although radiocarbon dates create one of the most important categories of archaeological data - crucial for dating particular contexts and more recently palaeodemographic analyses, archaeologists often treat them in the existing large databases without contextual information and disconnected from the rest of the archaeological data. This effectively prevents using them in close relationship with other large-scale archaeological datasets, e.g. archaeobotanical or archaeozoological data which are usually collected separately in specific (subdisciplinary) databases at different spatio-temporal scales or databases of material culture.

In this paper, we want to present an interdisciplinary approach taking advantage of large-scale data collection with the common focus on Neolithic and Bronze Age Europe. The existence of common research questions and aims across the involved disciplines enable us to demonstrate that a concurrent data collection driven by shared goals is a crucial prerequisite of every research aiming to be interdisciplinary. As a result, we can, for the first time, directly relate 14C dates and demographic proxies derived from them, with analytical data on many socio-economic aspects of prehistoric societies of Europe. Our approach will be illustrated in two case studies from northern and central Europe where we will relate demographic changes to shifts in subsistence strategies and cultural practices. We will also show how the archaeological data from regions with diverse interdisciplinary data coverage can be used for creation of large-scale and long-term perspectives on the human past.

8 **MULTIPLE IMPUTATIONS AS A MEANS FOR IMPROVING BIG DATA MODELING IN ARCHAEOLOGY AND ANTHROPOLOGY**

Abstract author(s): Ryan-Despraz, Jessica (Department of Physical Anthropology, Institute of Forensic Medicine, University of Bern) - Wissler, Amanda (Department of Anthropology, University of South Carolina)

Abstract format: Oral

Modern research benefits greatly from the technology and globalization ubiquitous to the common era. Researchers are able to travel and communicate within a broader network than ever before, and technology has enabled not only larger amounts and more diverse types of data, but also the ability to share data more easily. While these strides have the potential to improve the interpretive accuracy of data analyses, the overwhelming amount and types of data require new discussion on their proper treatment and exploitation. Cutting-edge model building using disparate data types drawn from archaeology, paleoecology, bioarchaeology, and historical demography can generate more robust understandings of life in the past. However, a problem with these types of archaeological and anthropological datasets is the presence of missing data. Multivariate statistics and complex model building cannot be performed when data are missing. While missing data are a commonly encountered phenomena, missing data management remains uncoded and underutilized in many fields of anthropology and archaeology. Failure to recognize the significance of missing data and the biases they create limits the possible analyses and can skew interpretations. This research discusses the issues surrounding missing data in anthropology and archaeology and provides an exploration of techniques in data imputation and their applications in data modeling.

This talk will then present a case study of data imputations with practical applications of applied data modeling on a large dataset containing mixed data types (quantitative and qualitative) derived from archaeological, osteological, and demographic data. The results exhibit the necessity of a more robust treatment of missing data in order to increase data analysis potential as well as to improve interpretations of past populations. As available datasets continue to expand, more complex models and statistical analyses will allow researchers to delve into new perspectives surrounding our shared human history.

9 INTERDISCIPLINARY DATASETS OF DIFERENT KIND - HOW TO INTEGRATE THEM? EXPERIENCE WITH ARCHAEOLOGICAL PROSPECTION AND SETTLEMENT ARCHAEOLOGY

Abstract author(s): Horak, Jan (University of Hradec Králové, Department of Archaeology; Charles University, Department of Archaeology) - Ferenczi, Laszlo - Janovský, Martin (Charles University, Department of Archaeology)

Abstract format: Oral

Analysis of large data sets has potential for future research. However, the nature of interdisciplinary work inevitably raises several key points. Data from different disciplines can have very different characteristics. These differences are of various types and are based primarily on descriptions of different parts of reality: geophysical or geochemical prospection; palynological or macro-remain data; archaeological sites and their hierarchies; geobotanical or pedological data, etc. How these data may or may not they be related? Another aspect is more technical: what is the number of data points in a typical dataset of a particular field? Does it cover a locality or a region? What is the spatial density of data points? Also: some are represented by points, others by polygons or lines. A crucial aspect is integration: do we just want to overlay maps, or to do regression analyses? The last major issue is the mathematical type of the data: what mathematical operations make sense to perform on it? We will present a couple of case studies where we have dealt with such a situation: the integration of geophysical and geochemical data (in a general and site-specific context) and the analysis of a settlement pattern of deserted villages in medieval Hungary. The work was supported by: 1) project INTER-COST (LTC19) subprogram of program INTEREXCELLENCE by the Ministry of Education, Youth and Sports of the Czech Republic, Project: ‘Geochemical insight into non-destructive archaeological research’; project number: LTC19016; 2) project: ‘Monastic manors and the landscape impact of Cistercian estate management: A landscape archaeological and historical ecological study on Plasy Abbey’ financed by the GAČR - Czech Science Foundation, grant No. 21-25061S; 3) networking support by the COST Action SAGA: The Soil Science & Archaeo-Geophysics Alliance - CA17131 (www.saga-cost.eu), supported by COST (European Cooperation in Science and Technology www.cost.eu).

10 CHANGE IS THE ONLY CONSTANT: MODELLING HUNTER-GATHERER ACTIVITY IN THEIR DYNAMIC ENVIRONMENT

Abstract author(s): Hoebe, Pir (University of Groningen)

Abstract format: Oral

Early Holocene sea level rise was a key factor in the changing northwest European environment, ultimately submerging the region of Doggerland beneath the North Sea. This paper takes an interdisciplinary approach to understand the impact of environmental change on human societies, combining models and data from paleoenvironmental studies, paleogeography and archaeology. Understanding change in prehistoric hunter-gatherers’ nomadic and traditional societies requires large, dynamic, and time sensitive spatiotemporal approaches. Here, Early Holocene landscape dynamics are modelled and compared with the spatiotemporal patterning of a large radiocarbon dataset of hunter-gatherer sites (12-7.5 ka calBP).

Mapping the extent and timing of sea level rise’s regional impact depends on reliable digital elevation models (DEMs) of the prehistoric surface and accurate sea level data. Previous models were restricted to combining limited sea level data with bathymetric DEMs, not taking Holocene sediment thickness into account, significantly impacting their accuracy. This is improved upon by combining paleo-DEMs of the top of Pleistocene sediments with relative sea level curves that take regional variability into account. This results in an inundation model that more accurately reflects the timing and extent of transgressions. Combining this with vegetation models results in a dynamic model of significant Early Holocene landscape change.

The impact of dynamic landscape change on human societies is then investigated with a large dataset of over 2000 radiocarbon dated sites. Kernel density estimates (KDE) of meaningful subregions in the landscape show changes in the density of past human activity. This makes it possible to show where and when changes in human activity align with significant transgressions or changes in landscape character. Overall this contributes to a more comprehensive understanding of the relationship between environmental change, landscape dynamics and human societies during the Holocene period.

11 MODELLING MOVEMENT ALONG THE ANCIENT LYBIAN SEA: AN OPEN AND INTERDISCIPLINARY APPROACH

Abstract author(s): Barruezo-Vaquero, Pablo - Laguna-Palma, David (University of Granada)

Abstract format: Oral

This paper is based on the efforts made by the PERAIA Project, which gathers an international team to trace movement and understand the historical connectivity within the regions bordering the Libyan Sea during the transition

from the Late Bronze Age to the Iron Age (ca. 1400-700 BC). The study is thus diachronic in scope and considers different scales of analysis. Its theoretical framework blends notions from Historical Ecology, human ecodynamics, and Landscape Archaeology, as well as approaches from Digital Archaeology. In other words, we aim to model movement whilst accounting for the systemic and historical interaction between humans and non-humans across this vast region.

The complexity of this research has required the application of different digital approaches (e.g., geospatial analysis and archaeological network research) in a methodology that maps archaeological sites by tying together various strands of evidence, from satellite imagery, historical sources, and environmental data. Such a large quantity of multivariate data is managed through a geospatial dataset, the backbone upon which our interdisciplinary knowledge is built. Likewise, the project seeks to attain ethical practices based on Open Science. Hence, digital technologies and the LOUD+FAIR data principles have been at the core of the project in terms of data development and management. This paper seeks to briefly explain—from theory to practice—our approach and workflow to modelling past mobility while enabling open research. We believe such an approach might be of interest to other researchers working in interdisciplinary environments.

12 INTEGRATIVE ARCHAEOLOGICAL AND ARCHAEOGENOMIC DATABASE FOR STUDYING POPULATION HISTORY

Abstract author(s): Sagmanova, Gulnaz - Vyazov, Leonid (University of Ostrava) - Flegontov, Pavel (University of Ostrava; Harvard University) - Isildak, Ulas - Flegontova, Olga (University of Ostrava)

Abstract format: Oral

Archaeogenetics, especially focused on humans and domestic animals, is a rapidly growing field of science. The total amount of sequenced and already published aDNA data exceeds 10000 individuals worldwide. This brings research on the population history to a new level, raising a demand for supporting the archaeogenetic data with a robust archaeological context.

To bridge the gap between aDNA and archaeology, we designed a Web-based and GIS-driven Integrative archaeological and archaeogenetic database, aimed to record, store, and analyze the information derived from archaeological and archaeogenetic research, allowing us to perform multidisciplinary analyses. The database is implemented using the Neo4J graph database management system and provided with interfaces for input/output, information analysis, as well as visualization of cartographic data. Types of stored data include texts, tables, images, and three-dimensional models of objects. The system accumulates all types of data collected as a result of scientific research, including texts, tables, images, three-dimensional models, etc.

Besides archaeological data, our database also contains publicly available genome-wide archaeogenetic data from Allen Ancient DNA resources associated with an archaeological context. The Web-GIS Toolkit allows users to select specific groups of burial sites or archaeological sites and perform simple genetic data analyses: hierarchical genetic distance clustering, PCA (base and user with definition projection on axes), ADMIXTURE, f-statistics, and qpWave / qpAdm. The database also allows users to store links between ancient individuals revealed by identity by descent (IBD), a high-resolution genetic analysis technique.

13 TOWARDS A COMMUNITY STANDARD FOR LEAD ISOTOPE DATA: WHERE WE ARE AND WHERE WE ARE HEADING TO

Abstract author(s): Rose, Thomas (Goethe Universität Frankfurt, Institut für Geowissenschaften; Forschungsbereich Archäometallurgie, Leibniz-Forschungsmuseum für Georessourcen/Deutsches Bergbau-Museum Bochum) - Klein, Sabine (Forschungsbereich Archäometallurgie, Leibniz-Forschungsmuseum für Georessourcen/Deutsches Bergbau-Museum Bochum; Institut für Archäologische Wissenschaften, Ruhr-Universität Bochum; FIERCE, Frankfurt Isotope & Element Research Centre, Goethe Universität Frankfurt) - Westner, Katrin - Hsu, Yiu-Kang (Forschungsbereich Archäometallurgie, Leibniz-Forschungsmuseum für Georessourcen/Deutsches Bergbau-Museum Bochum)

Abstract format: Oral

Accessibility and interoperability of reference and comparison data is crucial for modern-day archaeometry. While GlobalID is a first step towards a suitable global infrastructure for lead isotope data, the most essential component for the interoperability of such data is still missing: a common way of describing them, i.e. a community standard defining the metadata associated with lead isotope data. Recently, a workshop brought together large parts of the lead isotope community to discuss how such a community standard might be designed. The particular challenge is to deal with the wide variety of materials analysed, to reach an agreement on which metadata are essential and which are optional, and how such a metadata standard could be designed to be compliant with the FAIR criteria.

We will present the lessons learned from the discussions at the workshop, the challenges towards a FAIR-compliant metadata standard, and how we aim to insure interoperability with a wide range of similar data by reusing already existing metadata standards, ontologies, vocabularies, etc. While discussions for lead isotope data might be quite advanced, similar initiatives emerge also for other data types in the archaeological sciences. Our impressions and insights will hopefully facilitate comparable discussions in these initiatives. Moreover, our contribution aims to spark discussions with similar initiatives in other archaeological disciplines, hopefully leading towards an alignment of activities and harnessing synergies rather than working in parallel.

468 GILDING TEXTILES: NEW ARCHAEOLOGICAL EVIDENCE AND SCIENTIFIC DEVELOPMENTS ON THE PRODUCTION OF METAL THREADS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Solazzo, Caroline (Smithsonian Institution) - Scibè, Cristina (University of Seville)

Session format: Regular session

The embellishment of textiles with metals, most particularly gold, can be traced to early cultures, often seen in the ancient practice of adorning the dead in sumptuous garments. Metal threads were interlaced into the weave structure, attached to fabrics using embroidery techniques, or applied to cloth within ornamental bands (galloon, brocaded tablet-woven and tapestry bands, etc.). Another ornamental technique, largely practiced in both Near and Far East, was the use of gold leaf or powder to paint and print fabrics. The trade and exchange of finished textiles, and the sometimes forced relocation of weavers, led to the transfer of technologies and the establishment of highly specialized craftsmanship and workshops.

Extensive scientific works in the 1990s and early 2000s established the basis for the characterization, description and classification of metal threads. These studies, complemented by evidence from archeological finds, have pioneered the research on the production of gold-threaded textiles throughout history, while still leaving some questions regarding raw materials and making processes unanswered.

This session aims at gathering archaeologists, textile historians, and scientists to convene the latest finds and analytical developments on metal decorations, and discuss future research questions. Papers may focus on:

- Recent archaeological discoveries of gold textiles and metal threads
- Techniques of assembling metal threads: solid metal threads including wires and lamellae, and multi-layered complexes with organic substrates, adhesives and top-coat lacquers
- The making of gold and silver printed and painted textiles: gold leaf and powder applications on already woven fabrics, or to coat yarns
- Latest analytical developments for the scientific study of inorganic (metal leaf and powder, pigments, gilding base or preparation layers) and organic (tannins, substrates, adhesives and varnishes) components, using techniques including, but not limited to: optical microscopy, SEM-EDS, FTIR and ATR-FTIR, XRF, PIXE, GC-MS, LC-MS, proteomics, etc.

ABSTRACTS

1 A CROSS-DISCIPLINARY ANALYSIS OF GILDED TEXTILES PRODUCED BETWEEN 800 AND 1200 CE

Abstract author(s): Brown, Tonia (Independent Scholar and Researcher)

Abstract format: Oral

After inventorying more than 2,000 extant printed and gilded textiles dated to antiquity, as well as personally examining more than 200 such pieces to catalogue their physical characteristics (e.g., fiber content, yarn twist and ply, weave structure and density, size of motifs, other embellishments or notable features), the author proffers a cross-disciplinary analysis of the techniques used to print or paint cloths with gold – or substances intended to appear as gold – between the 9th and 12th centuries CE.

This paper presents the author's emerging research, along with an analysis of existing data on gilded textiles crafted primarily in the regions of West Asia and North Africa (e.g., modernly Egypt, Yemen, Iran, and Iraq) and East Asia (e.g., modernly China and Japan), as these two regions are pivotal in the history of gilded textile production. The process(es) of various known and speculated surface gilding techniques will be described, with references to relevant contemporary accounts and insights from period manuscript instructions and/or recipes. Finally, based on contextual clues from research and analysis, this paper explores the possible uses for gilded textiles and what we can surmise about the importance of these textiles in various cultures and at different times.

2 UNTANGLING THE LATE BRONZE AGE GOLD THREADS FROM EBREICHSORF, AUSTRIA

Abstract author(s): Saunderson, Kayleigh (University of Vienna; Natural History Museum Vienna)

Abstract format: Oral

By the Late Bronze Age in Central Europe (c. 1200–800 BCE), more and more textile techniques had been established and reached a peak in the subsequent Hallstatt period. However, one type of textile is specific to around 1100 BCE in this region: gold threads, often in bundles, exhibiting various twists and turns. These were found in burials and hoards, together with other prestigious gold artefacts. The focus of this contribution is one of these bundles that from a hoard in Ebreichsdorf, Lower Austria, excavated in 2020 and has since been carefully documented, cleaned, and analysed. These studies revealed specific structures, which are repeated throughout the bundle, indicating that the threads were part of a woven fabric densely interlaced by these gold threads. This fabric was ultimately tightly folded up and held together with gold wire before being buried. The same interlacing structures are visible in the other comparable gold thread finds, furthermore indicating that they formed patterns, while some structures are due to technological requirements. Additionally, experiments were carried out together with citizen scientists in the framework of workshops at the Natural History Museum Vienna and the University of Vienna, providing further indications of how such gold textiles could have been produced. Thus, we can now further grasp the techniques for producing the earliest known gold textiles and how they looked, likely representing a prestigious fabric reserved for the elite.

3 GOLDEN WEFTS. GOLD YARNS AND ORNAMENTS FROM THE NATIONAL ARCHAEOLOGICAL MUSEUM IN NAPLES. STUDIES AND INVESTIGATIONS

Abstract author(s): Rossignoli, Guia - Gennaioli, Riccardo - Masci, Maria Emilia (Opificio Delle Pietre Dure) - Miele, Floriana (Museo Nazionale Archeologico Di Napoli) - Patera, Anna (Opificio Delle Pietre Dure)

Abstract format: Oral

The National Archaeological Museum in Naples houses an exceptional collection of textiles from the Roman era made of heterogeneous materials such as gold, wool, linen, silk and asbestos. There are approximately one hundred finds, mostly from previous excavations carried out by the Bourbons in the Vesuvian area from 1738 onwards, which already raised curiosity at the time of their discovery.

The aim of this contribution is to present the Museum's core of gold textiles, consisting of around thirty specimens such as ribbons, yarns, skeins, fragments of textiles and laminae and small ornaments. The collection, despite its undoubted interest both in terms of the raw material used and the rarity of the evidence, is still little known to scholars.

In particular, starting from the first results of the collaboration recently established between the MANN and the OPD on a ribbon made of gold thread using the 'sprang' technique, a comprehensive research project is being carried out with the aim of gaining a complete knowledge of the entire group of artefacts. Besides the multispectral diagnostic campaign, investigations were conducted on the metal foil through MO, SEM and microanalysis investigations, which highlighted the absence of an animal or vegetable fibre core inside the very thin yarn, the very high percentage of gold among the elements present in the alloy, and the discovery of a red substance on the surface of the ribbon, which raised many questions. After this first project, focused diagnostic analyses and studies will be carried out regarding the nature of the constituent material, investigating at the same time ancient manufacturing processes. The preparation of a conservation project will begin, including conservation actions and specific indications on the long-term preservation of these rare and precious testimonies in order to make them visible to the public and safe in storage.

4 PREHISTORIC SCANDINAVIAN TEXTILES WITH GOLD THREAD DECORATIONS

Abstract author(s): Mannering, Ulla - Rimstad, Charlotte (National Museum of Denmark) - Vedeler, Marianne (Museum of Cultural History, University of Oslo)

Abstract format: Oral

In Scandinavia the use of metal threads, made of silver and gold lamella wound around a silk core, is a type of textile decoration method that appears quite late in the prehistoric period. It is in the preserved archaeological record possible to follow the development of a textile production tradition in an almost unbroken chain from the Early Bronze Age (ca. 1700 BC) to the end of the Viking Age (ca. AD 1050); a production which is fully based on locally available resources. In the Late Iron Age (ca. AD 700) however, new imported materials like silk and metal threads are integrated into the existing cloth culture. Some of these resources arrive to the North as finished products, such as woven silk textiles, while others rather represent the acquisition of raw materials that could be used in a specific local production, as seen in the narrow and very exclusive tablet-woven bands of silk, silver and gold thread. This presentation will focus on the dating, distribution and use of gold threads in textile production in Scandinavia until the 11th century AD.

5 GOLD AND SILK EMBROIDERED BRAID, 900 CE SCOTLAND

Abstract author(s): Harris, Susanna (University of Glasgow) - Davis, Mary (National Museums Scotland) - Makin, Alexandra (University of Glasgow) - Cartwright, Caroline (The British Museum) - Elliott-Minty, Celia - Opitz, Rachel (University of Glasgow) - Macente, Alice (University of Leeds) - Vanden Bergh, Ina (Royal Institute for Cultural Heritage (KIK-IRPA))

Abstract format: Oral

In 2014 metal detectorists in southwest Scotland discovered a Viking Age hoard of metals and other precious materials, including rare, preserved textiles, and silk braid with unusual gold embroidery. The braid is part of a textile-wrapped bundle containing three gold filigree socketed mounts and a black stone pendant with gold filigree casing. In one section, two strands of silk braid are connected by gold embroidery in a diamond pattern. Some of the silk appears to be threaded through a ring of gold thread. The socketed mounts were connected by the braid, and the same type of braid was used to suspend the pendant, possibly also threading through a ring of gold threads.

There are two types of gold thread. Both are made from gold strips twisted around a silk core, one is doubled. This 'doubled' gold yarn has few parallels and creates a dynamic texture. In this paper we present the preliminary results of the silk braid with gold embroidery, including fibre analysis of the braid using SEM, braid structure and embroidery technique using optical microscopy, composition of the gold using SEM-EDS and CT analysis of position, 3D morphology and formation of the braid and its embroidery. In addition, we will present the dyes preserved in the braids and embroidery threads, which were analysed by HPLC-DAD.

6 THE TECHNIQUES AND MATERIALS OF GOLD TEXTILES IN EAST ASIA

Abstract author(s): Lee, Boyoung (Korea University) - Li, Konstance Chun-tung (The University of Hong Kong)

Abstract format: Oral

Across cultures and throughout history, gold has been used to decorate clothes to manifest affluence, material wealth, and extravagance; as well as to enhance the socio-political function of dress. As a material, gold was favoured for clothing decoration for both practical and prestigious reasons. Firstly, gold as a material is highly malleable; secondly, it is an easily tradable commodity universally accepted – woven into clothes or not. As such, it is highly appreciated as a precious metal that denotes wealth and prestige across East Asia and beyond.

To analyse the development and evolution of the art of gold textiles, the understanding of its production methods and techniques must be illuminated too. More studies have been dedicated to the subject in the last decades, nevertheless, many of them are either published in East Asian languages only or available only in abridged translations, thus not providing the comprehensiveness seen in their originals. Therefore, we aim to integrate current knowledge of the techniques and materials of gold textiles production in East Asia from primary classical literature and modern research. Through this effort, we also hope to establish a comprehensive information database that could inform and supplement current international research. Most importantly, critical and annotated translations of the terminologies are provided in the current study.

7 MAKE IT OR FAKE IT: THE SPREAD OF TEXTILES WOVEN WITH GILDED THREADS IN THE 13TH AND 14TH CENTURIES

Abstract author(s): Shea, Eiren (Grinnell College)

Abstract format: Oral

Textiles woven with metallic threads, and especially gilded threads, were among the most valuable products made for the Mongol courts in the thirteenth and fourteenth centuries. These textiles were tailored into court dress across Asia, fashioned into panels to decorate the tents of Mongol khans, used as diplomatic gifts, and traded as luxury commodities between the Mongol territories, West Asia, and the Mediterranean. Desire for gold-woven textiles caused a spread of weaving technology and production techniques throughout the Mongol Empire and into the Mediterranean. In this paper, I will investigate the implications of the spread of new types of metallic thread production across Eurasia, in particular threads made using a technique I call gilt-membrane filé. This technique, which existed prior to the Mongol period but only became widespread after the Mongol conquests, involved gilding a substrate (usually animal membrane or skin) and wrapping thin strips of this gilded substrate around a textile core (a technique called filé). The core was often silk but could be made of linen or cotton as well. I investigate the ways in which the greater availability of fine textiles woven with gilded threads impacted previously held assumptions about the elite nature of gilded textiles. I will also examine the ways in which perceptions of authenticity impacted the ways in which the textiles woven with gilt-membrane filé were used, and by whom they were used.

8 ALL THAT GLITTERS IS NOT GOLD: THE MORPHOLOGY AND COMPOSITION OF PAPER-BASED METAL THREADS

Abstract author(s): Jerman, Callista (The Textile Museum)

Abstract format: Oral

Metallic embellishments have been added to textiles for thousands of years, in the shape of gilded leather, precious metal wires, spangles, sequins, and beads. The presence of metallic elements, particularly composite materials such as gilded paper and gilded leather, make storing and conserving these objects complicated. They also influence the condition in which these textiles might be found during excavation, especially in damp conditions. In order to further understand the reaction of East Asian paper-based metal threads to water, practical testing was paired with chemical analysis by ATR-FTIR and fluorescence microscopy to determine how 19th Century Chinese threads were made and if that influences their sensitivity to water. While there seems to be a correlation between the appearance of these threads and their composition, that has little impact on their behaviour when exposed to liquid water. Most remained stable on exposure to water vapour alone, suggesting that they may be more resistant to the impacts of humidity than originally thought.

9 GOLD-CLOTH FURNISHING AND ARABIC SOURCES IN THE COURTS OF EARLY MEDIEVAL ISLAM

Abstract author(s): de Lara, Juan (UCL)

Abstract format: Oral

Three documents from Fatimid Egypt, Abbasid Iraq, and Taifa Toledo, dated between the tenth and twelfth centuries and never studied together previously, describe the practice of decorating audience halls with gold-threaded furnishing textiles that were both embroidered and woven using the tapestry technique. These accounts provide important iconographic information. However, their most remarkable contribution to the research on organic metal thread is the specific information they offer on the production centres of each of these textiles. However, when this data is studied against the corpus of surviving material evidence, the results are contradictory, revealing a general preference or higher esteem for Eastern Mediterranean and Iranian fabrics over Andalusian textiles during the tenth and eleventh centuries in court environments. This presentation will discuss the current problems associated to the appearance and the production of organic metal thread in the Muslim world around the tenth century. For this, such discussion will be contextualised within a framework resulting from the analyses of comparative stylistic material in unison with the assessment of the Arabic accounts.

10 MEDIEVAL GOLD THREADS: MULTI-ANALYTICAL STUDY OF ANIMAL-BASED METAL THREADS TO EXPLORE THE SECRETS OF A SKILLFUL CRAFTSMANSHIP

Abstract author(s): Scibè, Cristina (University of Seville) - Solazzo, Caroline - Lam, Thomas (Museum Conservation Institute, Smithsonian Institution) - Török, Zsófia - Dönczö, Boglárka (Institute for Nuclear Research - ATOMKI) - Tosini, Isetta (Opificio delle Pietre Dure) - González López, María José (University of Seville)

Abstract format: Oral

Throughout the middle ages, a certain type of gold thread was widely used to embellish cloths and fabrics. This gold thread was made by gilding/silvering organic materials (leather, parchment, animal membranes or paper) with an adhesive medium (animal glue, egg, bole or the natural membrane exudate) and cutting them into narrow strips. Preferred to the solid strips of almost pure gold, these organic-based strips were characterized by their flexibility and lightweight, and could be used either flat or wound around a fibrous core. From their first appearance in the Far East, followed by the Byzantine Empire, they became very popular in Europe where the main textile workshops developed their own manufacture under the Arabian influence. The gold threads produced there were made by gilding strips of animal skin tissues or membranes and wrapping them around a fibrous core.

In the present work, the results of a multi-analytical approach to investigate materials and techniques of medieval animal-based metal threads are presented. Case studies from medieval Spanish, Italian and Middle Eastern textiles will be discussed.

By combining for the first time Optical Microscopy, Scanning Electron Microscopy/Energy Dispersive X-Ray Spectroscopy (SEM/EDS), Particle Induced X-ray Emission (PIXE) and Proteomics techniques, it has been possible to characterize all the components that made up the complex and multilayered structure of these threads. Therefore, different production technologies have been identified [1]. The complementary information that this approach brings, will contribute to the knowledge of the secrets of this skillful craftsmanship.

[1] Scibè, C., Solazzo, C., Tosini, I., Lam, T., Vicenzi, E., González López, M.J. Gilt leather threads in 11th-15th century textiles. Proceedings of the 11th Interim Meeting of the ICOM-CC Leather and Related Materials Working Group, 2020

11 SPINNING GOLD - PRACTICAL EXPLORATION OF MANUFACTURING METHODS FOR ANIMAL-BASED METAL THREADS

Abstract author(s): Kania, Katrin (pallia – Mittelalter hautnah / EuroWeb) - Niepold, Tracy (Bayerisches Landesamt für Denkmalpflege) - Scibé, Cristina (University of Sevilla)

Abstract format: Oral

Organically or animal-based metal threads were a cheaper and thus more accessible alternative to threads made from solid metal strips wound around a fibre core. However, we only know very little about the manufacture of these threads with their astonishingly fine strips.

Based on the analyses of membrane gilt threads from the Middle Ages, an experimental approach was made to reproduce gilt membrane threads. Different substrates and different adhesives for attaching leaf metal to the substrate were used, with the intention of analysing the resulting metallised membranes for comparison with the originals. In addition, methods for cutting and winding the membrane around a plied linen core was explored.

The trials resulted in a method that seems workable and fits in with microscopic pictures of the originals. At the same time experiences made during the experiment were strongly reinforcing our appreciation of the immense motoric skill and material knowledge of the medieval makers of these threads, as our result was significantly coarser and more irregular than the original pieces.

A. EXPERIMENT IN SPINNING GOLD WITH SILK, WEAVING SAMPLES OF RIBBON AND COMPARE WITH THE FINDS FROM POMPEII AND ALBA POMPEIA

Abstract author(s): Ariis, Lorena (Independent)

Abstract format: Poster

The Roman ribbons made by golden threads, have exerted a great fascination, not only for the characteristics and symbolism, but also for what achieved in the processing of gold threads. They are very thin of variable width under the millimeter, some analyses of Pompeii ribbons have highlighted that golden strips are irregular cut from foils and there are organic traces of silk.

The experiment consisted in spinning thin strips cut by special aluminum foils, this material is like the gold in terms of malleability, hardness, weight. The strips were spun with dyed silk yarn, based on observation from the analyses. This technique has been compared to the technique of cutting strips from gold leaf, used to gilding, and wrapping or spinning it with fiber threads. The next step was weaving ribbon samples with both types of threads, trying to recreate the fragment from Alba Pompeia of the 1st century AD, that is comparable in shape and structure to those of Pompeii collections.

The purpose of the experiment is to verify the similarities between the samples obtained with the morphology of the Roman fragments. An impalpable material such as gold leaf is difficult to wrap around the silk thread and the gold deteriorates easily, while foil is easier to work with, is stable but creates greater thickness irregularities. It can be deduced that both techniques were used in Roman period with different skills related to localized production and available materials.

471 WEAVING BRIDGES BETWEEN FUNERARY AND DOMESTIC ARCHAEOLOGIES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Denis, Solène (CNRS UMR 8068 TEMPS) - Bickle, Penny (University of York) - Souvatzi, Stella (University of Thessaly)

Session format: Regular session

This session asks how do we combine evidence arising from different archaeological contexts, to present more fully rounded social models for archaeological phenomena? Funerary, craft, domestic, industrial, symbolic or religious contexts produce different archaeological datasets, often constrained by the analytical method employed or theoretical framework required for interpretation. Funerary contexts, centered on the human skeleton and accompanying objects, give potential for biomolecular analysis targeted at individual identities and lifeways. Settlement and households, appearing in collective action, reveal specialization, food production, craft activities and environmental exploitation. The contrast between individual and the collection can at times be at odds with each other, while routes to synthesis do not emerge clearly from the evidence itself. For example, in the Neolithic contrasting narratives of equality be-

tween houses and inequality in the grave are in direct conflict. Yet, how to combine this wealth of data is thus rarely considered, usually only occurring at the highest level of analysis, and at quite some distance from the data.

We invite papers from different research traditions, and working across different chronological periods (from the Palaeolithic onwards), to consider how archaeology can produce multi-context perspectives by combining data from funerary and settlement practices.

Specifically, we wish to consider the following areas:

1. Appropriate methods for combining different datasets, whether proposing models or new interpretative frameworks.
2. Case studies from different time periods providing new insights into individual and collective identities, social practices or lifeways.
3. How the same question can be answered in different contexts? For example, mobility, dietary practices, hierarchy and kinship.

By questioning how we integrate datasets drawn from different contexts in different time periods we aim to produce new insights into social organization in the past, but also routes to further analysis.

ABSTRACTS

1 **BURIED WITH THE DEAD. ARCHAEOMETRIC INVESTIGATION OF AN ATYPICAL CHALCOLITHIC ADOBE BUILDING DISCOVERED IN ROMANIA, WITHIN THE SULTANA-MALU ROȘU NECROPOLIS**

Abstract author(s): Manea, Bogdan - Covătaru, Cristina (ArchaeoSciences Division, Research Institute of the University of Bucharest - ICUB) - Ignat, Theodor - Opreș, Vasile (Bucharest Municipality Museum) - Lazăr, Cătălin (ArchaeoSciences Division, Research Institute of the University of Bucharest - ICUB) - Panaiotu, Cristian - Dimofte, Daniela (Faculty of Geology and Geophysics, University of Bucharest)

Abstract format: Oral

Located in the south-eastern part of Romania, the prehistoric necropolis of Sultana-Malu Roșu was used for an extended period of time during Early and Developed Chalcolithic by the so-called Boian (ca. 5200-4500 BC) and Gumelnița (ca. 4600-3800 BC) communities from the area.

Interestingly, the 2014 excavation season revealed the presence of a foundation ditch in one of the archaeological trenches, which, during the 2015 campaign, turned out to be part of a burnt and collapsed adobe structure, partially identified in another trench placed parallel to the one from the previous year. Following these discoveries, we continued by expanding the digging-area and, for the next six years, we investigated systematically what proved to be the remains of a long building, with atypical large dimensions for this spatial-temporal framework.

The current paper will summarize all aspects related to the applied field methodology and, by default, the entire data set collected in the course of the excavation. The whole post-excavation research endeavour involved the processing of geospatial data (GIS, UAV photogrammetry) and the deployment of archaeometric analysis through multiple techniques (FTIR, XRD, paleomagnetism and radiocarbon dating), to the purpose of identifying as many hidden elements as possible on the birth, life and death of this prehistoric building. All of the acquired information will be presented together with their interpretation.

Ultimately, we believe that by framing the results generated by this study in a broader geographical and chronological perspective, new developments in our understanding of technologies, specificity, decision-making and habitation, will emerge.

This work was supported by: a grant of the Romanian Ministry of Education and Research, CNCS - UEFISCDI, project number PN-III-P4-ID-PCE-2020-2369, within PNCDI III; a grant from the Ministry of Research, Innovation, and Digitisation, contract number 41PFE/30.12.2021, within PNCDI III;

2 **ORNAMENTS FOR THE LIVINGS? A STATUS COMPARISON BETWEEN FUNERARY AND DOMESTIC SITES ORNAMENTAL ELEMENTS DURING FINAL NEOLITHIC IN PROVENCE**

Abstract author(s): Viel, Laurine (Aix Marseille Univ, CNRS, Minist Culture, LAMPEA)

Abstract format: Oral

The aim of this paper is to compare the elements of adornment from Final Neolithic burials and domestic settlements in south-eastern France, to understand both the status of these objects and the one of who wear them. Final Neolithic is often presented as the period of increasing social distinction markers. However, the evidence of a marked differentiation of individuals in Provence (south-eastern France) between 3500 and 2200 BC is rare.

The elements of adornment can be markers of social distinction, by the nature of the raw materials, the shapes, and the technical aspects, allowing a distinction between individuals. However, in order to know the status of individuals, it is necessary to wonder about the status of these adornments. How can they be characterised? Do they differ according to the domestic or funerary context?

To answer these questions, I recorded each intrinsic characteristic of the items of adornment (material, dimensions, shape, traces) to define their biography (manufacture, use, deposit) and their status (social value of these objects). This protocol was applied to two burials and one domestic site.

Different results emerged from this study (function of the items of adornment, difference in production demonstrating the presence of several statuses, differentiation of the buried by the adornment...). In this paper, I will focus on the absence of certain items of adornment in the collective burials of the region, which are present in the domestic sites. Is this difference related to a difference in the status of the populations? Or did the populations of the Final Neolithic in Provence sort the ornamental elements before depositing them in the graves with the dead?

3 LIFE CYCLE. LINKS BETWEEN SETTLEMENTS AND BURIAL CAVES DURING THE CHALCOLITHIC IN THE LISBON PENINSULA (PORTUGAL)

Abstract author(s): Delicado, Cátia (UNIARQ- Centro de Arqueologia da Universidade de Lisboa; CIAS - Centro de Investigação em Antropologia e Saúde da Universidade de Coimbra; FCT- Fundação para a Ciência e a Tecnologia) - Texugo, André (CEG- Centro de Estudos Geográficos da Universidade de Lisboa; UNIARQ- Centro de Arqueologia da Universidade de Lisboa; FCT- Fundação para a Ciência e a Tecnologia) - Van Calker, Daniel (UNIARQ- Centro de Arqueologia da Universidade de Lisboa; FCT- Fundação para a Ciência e a Tecnologia) - Rendeiro, Luis (CEG- Centro de Estudos Geográficos da Universidade de Lisboa; UNIARQ- Centro de Arqueologia da Universidade de Lisboa; FCT- Fundação para a Ciência e a Tecnologia) - Sousa, Ana Catarina (UNIARQ- Centro de Arqueologia da Universidade de Lisboa)

Abstract format: Oral

The 3rd millennium BCE, Portuguese Estremadura territory was marked by the existence of numerous hilltop sites, with many confirmed walled structures. This phenomenon is common to the Iberian Peninsula, being Estremadura one of the regions with the highest concentration of these sites, although there is diversity (size, chronology, and architecture).

Estremadura's geological setting, comprising a mosaic of limestone substrates punctuated by volcanic elevations, provides numerous natural caves which have been used as burial spaces since the early Neolithic. This concentration of cave-necropolis is unparalleled in the westernmost part of the current Portuguese territory. Some limestone massifs with a special presence in the landscape, have abundant caves used as burial spaces, such as Montejunto hill, Cesaredas highland, Alcobça valley, or Estremadura Limestone Massif, where domestic contexts are almost non-existent.

There are several walled sites with funeral caves documented within their immediate surroundings, others in which this relation is slightly further apart, but still nearby, and finally, those with no apparent relation. Moreover, the diversity of the diachronic scheme should be highlighted: in some cases, the burial caves are earlier and in other cases, they correspond to the final stages of Chalcolithic. No structured necropolises have been identified near the walled sites in Estremadura, but there are occasional and scarce presences of human remains. This panorama is completely different from the ditched enclosures of the Southern Peninsula.

This paper seeks to analyze the possible correlation between the deployment strategy of walled Chalcolithic settlements and the natural cavities through spatial and chrono-cultural analysis, exploring relationships as places of memories (previous, coeval, or later). An attempt will be made to understand the visual relationship between settlements and cave-necropolis, establishing a direct relationship through the use of GIS and the access routes, assuming the geological bedrock is the main limiting factor.

4 TESTING RESIDENCE THROUGH DWELLINGS' SIZE: ARGARIC SETTLEMENTS AS A CASE STUDY

Abstract author(s): González-Serna Lloná, María del Carmen (Department of Prehistory - University of Granada) - Cintas Peña, Marta (Department of Prehistory - University of Seville) - Murillo Barroso, Mercedes (Department of Prehistory - University of Granada)

Abstract format: Oral

Since the beginning of the archaeological discipline, kinship and residence have been key issues to approach social organization of past communities. In the last years this traditional interest has been renewed by the possibility of addressing it through modern techniques such as aDNA and strontium isotopes analyses, being both type of data obtained directly from human remains recovered in funerary contexts. In some cases, such as in the recent analysis of Argaric Bronze Age society (Iberian southeast) the conclusions obtained have completely transformed previous

hypothesis. Although DNA and strontium isotopes analyses are powerful tools to address residential patterns and, related to it, kinship, cross-cultural studies have demonstrated that approaching residence archaeologically is also possible through the size and distribution of dwellings within a settlement. With the aim of contributing to weave bridges between funerary and domestic archaeologies, in this paper we present the analysis of the size of houses in different Argaric settlements. Thus, in this contribution we test whether the conclusions reached by the genetic studies about the Argaric society being patrilocal are also endorsed by the housing pattern.

5 BETWEEN THE LIVING AND THE DEAD. COMBINING DIFFERENT LEGACY DATASETS IN THE BRONZE AGE SITE OF TORRE CASTELLUCCIA (APULIA, ITALY)

Abstract author(s): Pizzuti, Elisa - Palazzini, Flavia (Sapienza-Università di Roma)

Abstract format: Oral

Torre Castelluccia (18 km southeast of Taranto, Apulia) is one of the few Bronze Age sites in Italy that has yielded remains of both habitations and spatially contiguous burials of different types and chronology. Given its uniqueness, it is an ideal case study to tackle the issue of integrating data from funerary and domestic spheres when reconstructing past societies. However, since archaeological research at this site was mostly conducted in the 1950s and 1960s and information is stored in non-digital formats, data management has proven to be quite challenging. Thus, the first goal of our study was the conversion from a physical to a digital archive; this procedure helped to prevent further data loss and created a space where different datasets could communicate. The new database enabled managing and comparing information on the settlement and funerary areas (e.g. to identify similar pottery functional types used in both contexts) and directly supported their interpretation. One of the outcomes was a more accurate characterization of the activity phases for each considered context, which contributed to further speculations on social and cultural dynamics. In fact, while the fortified settlement is continuously occupied from the South Italian Middle Bronze Age until Greek colonization, the cremation cemetery is in use in the Late Bronze Age and is partly coeval with at least one rock-cut „grotticella“-type tomb (whose skeletons have unfortunately not been fully preserved). This chronological overlap is referable to a complexity of coexisting rites, possibly adopted by different social groups, whose reflection in the settled area can be searched for. In this paper, we will present the results of our research. Based on first-hand experience, we will also discuss the potential of linking funerary and domestic data using a single repository which can be queried and updated at any time.

6 LITTLE BRONZE AGE COMMUNITY. CASE STUDY PŘÁSLAVICE, CZECH REPUBLIC

Abstract author(s): Šabatová, Klára (MUNI - Ústav archeologie a muzeologie) - Cheung, Christina (Chinese University of Hong Kong) - Jarošová, Ivana (Masarykova univerzita) - Snoeck, Christophe (Vrije Universiteit Brussel)

Abstract format: Oral

A little community of Middle and Late Bronze Age lived in Přáslavice, Central Moravia. Defined settlement components represents residential, storage, industrial and refuse functions of a farm settlement and a burial site. The burial component belongs to the Late Bronze Age and falls in Urnfield period in the area. All the methodological parts, the description, statistical analysis and interpretation, had to take into account the different archaeological record in the settlement and burial context and combine them. The development led excavation was realised in the 1990's but new scientific methods enabled the creation of new data sets that allow new discussions over the former conclusions.

The first objective of this paper is to draw a comparison of the formalised ceramic datasets from the graves and settlement contexts. The case study is based on combination of statistical methods (chronology, depositional, and post-depositional history), traditional typology (chronology and cultural affiliation) and GIS methods (spatial relations).

Second, a set of new radiocarbon dates obtained from cremated bones will be confronted with the earlier data from the charcoals and typological schema of the site.

Third, the results of strontium isotope analyses from the cremated burials will be discussed in the context of anthropological and archaeological analysis and subsequent interpretation.

7 THE LATE IRON AGE SETTLEMENT OF SAMREKLO IN THE MIRROR OF ITS SURROUNDINGS

Abstract author(s): Arnhold, Simone (Martin-Luther-University)

Abstract format: Oral

At the multi-phase site of Samreklo, Prov. Kakheti/Georgia, on the north-western edge of the Shiraki Plain, layers of the Late Bronze/Early Iron Age and Late Achaemenid/ Hellenistic periods are currently being investigated. The architecture of the Late Iron Age shows clear differences in construction methods and the pottery represents a wide range of different types, some of which have decorative elements limited to one settlement. In addition, finds were excavated that suggest local workshops. Slightly younger are graves that show very different burial concepts.

Besides Samreklo, other Late Iron Age settlements on the Shiraki Plateau have also been investigated or are known based on surveys. At present, it seems that a diverse settlement pattern existed on the Shiraki Plateau in the Late Iron Age with numerous indications of different crafts as well as a pronounced need for imitation of luxury goods. Their forms appear strikingly familiar, but were transferred in a regional context both in terms of their laying down and in terms of decorative design.

8 WEAVING BRIDGES BETWEEN THE CHURCH CEMETERIES AND RESIDENTIAL AREAS. HOW TO INVESTIGATE THE SOCIAL ORGANISATION OF THE EARLY MIDDLE AGES?

Abstract author(s): Machacek, Jiri - Dresler, Petr - Hofmanova, Zuzana (MUNI - Ústav archeologie a muzeologie) - Sladek, Vladimir (UK Prague, Katedra antropologie a genetiky člověka) - Prichystalova, Renata (MUNI - Ústav archeologie a muzeologie)

Abstract format: Oral

This paper will discuss the integration of datasets from the funerary and settlement context, dating back to the Early Middle Ages. We will focus on interpreting extensive archaeological and bioarchaeological data in terms of social organisation. The case study is Pohansko near Breclav (Czech Republic), an important central place of the Great Moravian polity.

Archaeologists from the Masaryk University have zeroed in on the area of the Northeast Suburb at Pohansko, the site of the discovery of a church, surrounded by a vast cemetery. The most important discovery was made in the rotunda's interior, where five graves were found.

Based on these discoveries, we formulated a hypothesis on the social structure of the community buried there. The most important burial from the whole group was apparently the remains of an older man from grave No. 153, which was found in a prestigious position. We are working with the hypothesis that the man buried in the church was its founder and the graves in the surrounding cemetery were those of his familia, which we take to be a household at the centre of which was the head of the family.

The next step in investigating the North-East Suburb was research carried out outside the cemetery to test the hypothesis proposed above. During testing, we formulated a prognosis derived from our hypothesis that if the man buried in a place of honour inside the church was indeed its owner, he must have had sufficient assets available to ensure the operation of the church. At the same time, he would have owned a splendid residence – *curtis* – matching his social position. In testing the initial hypothesis, we concentrated on the settlement area.

475 EXTRACTING PATTERN AND STRUCTURE FROM A COMPLEX PHENOMENON? TECHNOLOGICAL COHESION, VARIABILITY AND REGIONAL SIGNATURES ACROSS THE EURASIAN INITIAL UPPER PALAEOLITHIC [PAM]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Djakovic, Igor (Leiden University) - Hussain, Shumon (Aarhus University) - Zwyns, Nicolas (UC Davis)

Session format: Regular session

The Initial Upper Palaeolithic (IUP) is emerging as a key to understanding the spread of anatomically modern human populations (AMHs) throughout Eurasia and the pronounced technocultural dynamics marking the period between c. 55 and 35 kya. The IUP macro-phenomenon has been argued to consist of a series of broad technological and typological similarities shared across vast geographic distances, either because of common origin or technological convergence. Yet, IUP assemblages also appear to exhibit striking regional variation and it is presently unclear to what extent this is linked to the flexible nature of the phenomenon itself, for example as an adaptive strategy, or has primarily to do with divergent regional histories. Confirmation of the latter may provide evidence for the importance of inter-hominin relations in the emergence and consolidation of the IUP across Eurasia. Given this situation, it is interesting that there has so far been little explicit attempt towards 'extracting' the regional and temporal structures defining the IUP. Conversely, it remains an important open question which specific technological behaviors 'unite' the IUP (i.e. are ubiquitous) and which behaviors instead circumscribe regional peculiarities. These and related questions gain further immediacy due to the mounting evidence for elevated hominin diversity at the end of the Late Pleistocene.

This session invites researchers with diverse backgrounds to share and discuss present work on the IUP across Eurasia and to interrogate the 'unity' and 'diversity' of the phenomenon. We welcome fieldwork-oriented contributions, assemblage-level and regional analyses, macro-level analyses and theoretically informed reflections as to the nature and structure of the IUP.

1 CHARACTERISING CLIMATIC VARIABILITY DURING THE INITIAL UPPER PALAEOLITHIC: A REVIEW OF EURASIAN CLIMATE RECORDS 50-40 KA BP

Abstract author(s): Paine, Clea (UHI) - Zwyns, Nicolas (University of California Davis)

Abstract format: Oral

The IUP phenomenon extends across a very wide area, today representing a diverse range of climates and ecosystems, including some of the most arid areas on earth. The extent to which this present-day environmental variability existed at the time of IUP occupation has so far been difficult to assess owing to a paucity of long-term, high-resolution climate records, particularly in currently arid areas. This has consequences for our understanding of demography (the geographic extent of any demographic vacuum created by Greenland Stadial (GS)13; the existence of hominin refugia), corridors for and barriers to dispersal (the expansion and contraction of desert margins; possible desert greening during pluvial phases), and technological diversity (where this might be a response to habitat diversity). Through a review of published climate records, this talk presents a first effort at climatic reconstruction for the period between approximately 50 and 40 ka BP, focusing on the regions where IUP sites are attested. In a context of widespread aridity, evidence is presented for locally varied responses to stadials including GS13 (Heinrich Event 5), with possible implications for the habitability of the continental and extreme continental zones of Eurasia both before and during IUP dispersal.

2 THE SUBSISTENCE AND DIET OF INITIAL UPPER PALAEOLITHIC HOMO SAPIENS CA. 45,000 YEARS AGO

Abstract author(s): Smith, Geoffrey (School of Anthropology, University of Kent; Max Planck Institute for Evolutionary Anthropology) - Spasov, Rosen (Archaeology Department, New Bulgarian University) - Martisius, Naomi (Department of Anthropology, University of Tulsa; Max Planck Institute for Evolutionary Anthropology) - Pederzani, Sarah (Instituto Universitario de Bio-Orgánica Antonio González, University of La Laguna; Max Planck Institute for Evolutionary Anthropology) - Fewlass, Helen (Francis Crick Institute; Max Planck Institute for Evolutionary Anthropology) - Ruebens, Karen (Chaire de Paléanthropologie, Collège de France; Max Planck Institute for Evolutionary Anthropology) - McPherron, Shannon (Max Planck Institute for Evolutionary Anthropology) - Sirakov, Nikolay (National Institute of Archaeology with Museum at Bulgarian Academy of Sciences) - Tsanova, Tsenka (Department of Chemistry G. Ciamician, Alma Mater Studiorum, University of Bologna; Max Planck Institute for Evolutionary Anthropology) - Hublin, Jean-Jacques (Chaire de Paléanthropologie, Collège de France; Max Planck Institute for Evolutionary Anthropology)

Abstract format: Oral

The timing and nature of Homo sapiens expansion into Eurasia remains a crucial and much debated topic. Due to poor bone preservation, past studies have strongly focused on the Initial Upper Palaeolithic (IUP) stone tool record, with only limited reconstructions of the subsistence strategies of these early groups of Homo sapiens possible.

Recent discoveries from Bacho Kiro Cave now provide an exceptionally well-preserved faunal assemblage directly associated with these early Homo sapiens (Smith et al., 2021). In this presentation we will discuss a shift in site use and occupation through time from low, ephemeral occupation in the MP to a significant increase in anthropogenic material within the IUP levels that includes higher densities of lithic tools, butchered animal remains and specialised bone tools and ornaments. These layers are also marked by a significant decrease in carnivore use of the site and seasonality data indicating prolonged occupation by IUP groups. While bone remains are predominantly from large herbivores, a distinct aspect of the IUP occupation is a significant increase human butchery signatures across carnivore remains of all body size classes. This is correlated with exploitation for pendants and potentially for skins and furs.

At a broader scale, this presentation will discuss subsistence behaviour across other IUP sites in Eurasia where the first IUP occupations are characterised by a less intense anthropogenic signature with find densities and human modifications increasing in succeeding IUP layers.

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3 PERSONAL ORNAMENTS IN THE IKH TULBERIN GOL (TOLBOR VALLEY, NORTH MONGOLIA): ITS RELEVANCE FOR THE UPPER PALEOLITHIC DEVELOPMENTS IN EURASIA

Abstract author(s): Rigaud, Solange (CNRS-Université de Bordeaux, UMR5199 PACEA) - Rybin, Evgeny P. (-) - Khatsenovich, Arina M. (-) - Gunchinsuren, Byambaa (Institute of Archaeology, Mongolian Academy of Sciences) - Talamo, Sahra (Department of Chemistry “G. Ciamician”, University of Bologna; Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology) - Tsedendorj, Tsedendorj - Odsuren, Davaakhuu (Institute of Archaeology, Mongolian Academy of Sciences) - Izuho, Masami (Faculty of Social Sciences and Humanities, Tokyo Metropolitan University) - Hublien, Jean-Jacques (Chaire de Paléanthropologie, Collège de France; Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology) - Zwyns, Nicolas (Department of Anthropology, University of California-Davis)

Abstract format: Oral

Personal ornaments are considered as a key element of past material productions that tracks early symbolic behaviors. While beads are attested between 142-60 ky in Sub-Saharan, East and North Africa and the Levant, only four marine species among hundreds available along contemporary shores and estuaries are used as ornament. Although associated human remains have been attributed to anatomically modern humans, they also retain archaic anatomical traits. A clear change is observed after 52 ka with the development and proliferation of disk-shaped beads, particularly with those made from ostrich eggshell in East and South Africa during the LSA. The picture is drastically different in Eurasia where, from 45 ky cal BP onward, the first uncontroversial personal ornaments show substantial variations in shape, color and raw materials. So far, Bacho Kiro (Bulgaria) is the only Initial Upper Paleolithic assemblage for which a clear association between beads and *Homo sapiens* remains is documented. Yet again, the latter have recent Neanderthal ancestors, thereby suggesting that, in Eurasia, variations observed in personal ornaments could reflect cultural processes triggered by successive dispersals of modern populations and their encounters with local hominins. Hence, it raises questions regarding the underlying mechanisms responsible for the formation of such a diverse Upper Paleolithic archaeological record in Eurasia. Recent work in Northern Mongolia offers avenues to document the evolution of personal ornament productions and uses by *Homo sapiens* human groups; from their initial dispersals to their permanent settlement in Central and East Asia. Here, we present recent results obtained on the personal ornaments from the Tolbor Valley (Tolbor-16, -17, -21, -34), and we discuss the cultural meaning of diachronic variations from the Initial to the Middle Upper Paleolithic in Eurasia through large-scale geographic comparisons.

4 THE MIDDLE TO UPPER PALEOLITHIC TRANSITION: INTEGRATING DATA FROM HIGH-RESOLUTION EXCAVATIONS WITH MODELS OF HUMAN DISPERSALS

Abstract author(s): Goder-Goldberger, Mae (Ben-Gurion University of the Negev)

Abstract format: Oral

Debates concerning the appearance and spread of the Initial Upper Paleolithic (IUP) techno-complex are intertwined with discussions regarding the spread of modern humans across Eurasia. As a result, there is an ongoing transformation in the use of the term IUP and its embedded association with the dispersal of modern humans. This outlook overshadows the importance of high-resolution studies of lithic assemblages and their contribution to deciphering triggers of transition.

Turning to the Levantine late Middle Paleolithic (MP) and IUP lithic assemblage variability and their temporal association, it is evident that innovative technological practices first seen in late MP become prominent in the IUP. The introduction and acceptance of innovative technological practices will be presented by comparing assemblages from recently excavated late Middle Paleolithic open-air sites in the north-western Negev, Israel to IUP assemblages from the southern Levant. Assuming that lithic assemblages act as proxies of behavioural flexibility and adaptability, the introduction and acceptance of innovations suggest that something in the social or ecological environment inspired the acceptance of changes. The presented data will then be used to discuss how these studies can contribute to explaining the spread of the IUP across Eurasia.

5 HUMAN MIGRATIONS AND THE INITIAL UPPER PALEOLITHIC - A VIEW FROM THE NEGEV DESERT, ISRAEL

Abstract author(s): Barzilai, Omry (Israel Antiquities Authority)

Abstract format: Oral

The Initial Upper Paleolithic (IUP) in Eurasia is a chrono-cultural phase corresponding with the onset of systematic production of broad-base blades. This phenomenon is often conceived to correlate with the arrival of modern human, but the mechanism of geographical spread is unclear yet.

The IUP was originally defined after the site Boker Tachtit in the Negev Desert where two consecutive superimposed lithic industries were recovered. The lower, named Emiran, is characterized with production of pointed blades from bidirectional cores, whereas in the upper industry the blades were produced from semi-prismatic unidirectional cores. The blades of both industries were produced by hard hammers.

Recent high-resolution dating of Boker Tachtit have shown the Emiran is contemporaneous with Late Middle Paleolithic assemblages dominated by Levallois technology. The identification of parallel lithic industries in a confined geographical area at this specific time span, imply the presence of different cultural groups when modern humans arrived in Eurasia.

Similar technological features between the Emiran and assemblages from the Nile Valley, suggest the early Boker Tachtit inhabitants may have originated from this region. The Emiran developed at Boker Tachtit into the later unidirectional industry, but apparently also expanded northward to central Europe. This expansion possibly reached north-east Asia as suggested by similar technological assemblages.

The later IUP variant behaved in a similar manner. It developed locally into the desert Ahmarian techno-complex but also expanded into the northern Levant and the Balkans. However, recent discovery of the Neronian in western Europe, indicate an earlier expansion into Europe that correspond with the Late Middle Paleolithic in the Levant.

In sum, the Levantine IUP record currently reflect at least two dispersal events.

6 INITIAL UPPER PALAEOOLITHIC ON THE IRANIAN PLATEAU: ESKOULDAR ROCKSHELTER, SOUTHERN ALBORZ MOUNTAINS

Abstract author(s): Ghasidian, Elham (Neanderthal Museum, Mettmann, Germany; Institute for Prehistoric Archaeology, University of Cologne; DiyarMehr Institute for Palaeolithic Research)

Abstract format: Oral

The Late Pleistocene of southwestern Asia witnessed hominin diversification and adaptation to the new environments. The timing and pattern of biological and cultural shifts that occurred in this region during MIS 4–3 are hotly debated in palaeoanthropology. The Iranian Plateau in southwestern Asia lies at the crossroad between Africa, Europe, Central Asia, and the Far East and can, therefore, contribute substantially to the history of hominin migration.

The focus of this research is on the Eskouldar Rockshelter (1903 m above sea level) located in the southern piedmonts of the Alborz Mountains, northern Iranian Plateau. In 2019 and 2021, excavations at this rockshelter revealed novel hominin behavioural and settlement systems, known as Initial Upper Palaeolithic in the Levant, eastern Europe, Siberia and Mongolia. Eskouldar strata was ¹⁴C and OSL dated. The lithic industry comprises of strong use of the Levallois blade technology, associated with typical Upper Palaeolithic tool types including mostly endscrapers, denticulates and notches. Preliminary inter-regional comparisons bear less resemblances of this assemblage to the Middle and Upper Palaeolithic of the Zagros, Iranian Central Plateau and the sites located at the northern slopes of the Alborz namely in the Southern Caspian Sea Corridor. In this chronological window, well developed bladelet industry of the Upper Palaeolithic was already developed in different parts of the Iranian Plateau. In addition, using extensive Levallois technology, like observed in Eskouldar, is not reported at any site on the Plateau so far.

The data from Eskouldar determines, for the first time, a physiogeographic, chronostratigraphic and anthropogenic picture of the Initial Upper Palaeolithic on the Iranian Plateau. It aids in deciphering the Initial Upper Palaeolithic hominins behaviours and unravels the important role of the northern Iranian Plateau in the hominins' expansion route towards Central Asia.

7 INITIAL UPPER PALEOLITHIC IN MORAVIA

Abstract author(s): Škrdla, Petr - Bartík, Jaroslav (Institute of Archaeology of the CAS, Brno) - Demidenko, Yuri (Ferenc Rakoczi II Transcarpathian Hungarian College of Higher Education) - Rychtaříková, Tereza (Institute of Archaeology of the CAS, Brno)

Abstract format: Oral

The time span (ca. 50–35 ky cal. BP) between the Middle and the Upper Paleolithic is a period in prehistory when, in the wider Eurasian context, Anatomically Modern Humans (AMH) replaced the Neanderthals. During this period, lithic technologies in Moravia are generally characterized by evolved Levallois technology in the Bohunician and bifacial reduction in the Szeletian (Škrdla 2017a,b).

While the Szeletian is rooted in local MP technological traditions, the Bohunician has an intrusive character in Moravia and represents a glass in the Initial Upper Paleolithic techno-complex mosaic of sites broadly distributed over Eurasia. The Bohunician technology reconstructed on the basis of the refitted cores from Stránská skála presents a volumetric concept allowing serial production of Levallois points with blades as a secondary knapping product. The Bohunician technology shows a high degree of similarity with the material from layers 1–3 at Boker Tachtit, Israel (Škrdla 2003). In contrast to the technologically pure Bohunician collections from Stránská skála, the collection from the Bohunice

type-site includes bifacial reduction and a recently described industry from Ořechov IV shows two trends – miniaturization of artifacts including Levallois points and the onset of bladelet technology.

References:

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8 CORE TYPOLOGY, REDUCTION SEQUENCES, AND VARIATIONS BETWEEN IUP LITHIC ASSEMBLAGES: A CASE STUDY FROM NORTH MONGOLIA

Abstract author(s): Zwyns, Nicolas (University of California-Davis) - Bolorbat, Tsedendorj - Odsuren, Davaakhuu - Gunchinsuren, Byambaa (Institute of Archaeology, Mongolian Academy of Sciences)

Abstract format: Oral

The Initial Upper Paleolithic (IUP) refers to archaeological assemblages that are relevant to the early dispersals of *Homo sapiens* populations in Eurasia. Genetic evidence shows that, as they moved across Europe and Asia, members of our species encountered Neanderthal, Denisovan and maybe other local populations. IUP assemblages are often described as a combination of Middle and Upper Paleolithic typo-technological features, or more broadly, as a technology in transformation. Yet the composition of archaeological assemblages could illustrate contact between different populations/species, but also adaptive behaviors responding to resources availability, or stochastic variations within the realm of specific technologies. At the scale of Eurasia, substantial variations between assemblages are observed and it is not clear whether the IUP should be considered as a relatively unified cultural unit, or as an analytical category lumping together unrelated industries. In this context, to investigate what drives variations within assemblages may contribute in identifying what typo-technological traits are relevant to comparisons on a larger geographical scale. Here, I give a close look at one of the defining aspect of the IUP in a lithic assemblage dated to ca. 45 ka cal BP, at the site of Tolbor-16 (Northern Mongolia). Although variations in core shape and size are often used to recognize distinct reduction sequences, they may also reflect a dynamic process that involves decision-making and stochastic behaviors, raising a general question: what is the influence of dynamic reduction processes on the assemblage composition? To do address this question, I compare reduction methods and core volumes across typo-technological categories. The results suggest that variability in core morphology may illustrate the different steps in a reduction model, but to a certain extent, a coexistence between distinct reduction pathways.

9 IDENTIFYING SHIFTS IN BLANK CUTTING-EDGE EFFICIENCY WITHIN AND BEYOND THE INITIAL UPPER PALEOLITHIC AT TOLBOR, MONGOLIA

Abstract author(s): Johnson, Corey (University of California, Davis) - Bolorbat, Tsedendorj (Institute for History and Archeology, Mongolian Academy of Sciences) - Grote, Mark (University of California, Davis) - Paine, Clea (University of Highlands and Islands) - Odsuren, Davakhuu (Institute for History and Archeology, Mongolian Academy of Sciences) - Khatsenovich, Arina (-) - Rybin, Evgeny (-) - Izuho, Masami (Tokyo Metropolitan University) - Gunchinsuren, Byambaa (Institute for History and Archeology, Mongolian Academy of Sciences) - Zwyns, Nicolas (University of California, Davis)

Abstract format: Oral

The appearance of Initial Upper Paleolithic (IUP) technology in northern East Asia during MIS 3 marks a significant change in the lithic archaeological record of the region. IUP technology is characterized by the production of massive blades from asymmetrical, sub-volumetric cores. The Asian variant also involves the production of small blade/bladelets (for which the function is still unclear), using a singular method described as ‘burin-core’ reduction. Understanding the economic trade-offs within IUP tool kits can help reveal important information regarding how those systems operated, and how they compare to later Upper Paleolithic (UP) technologies that developed thereafter. Here we address the IUP record from Tolbor Valley, Mongolia, by investigating a key techno-economic aspect of the lithic tool kit: blank cutting-edge length. To this end, we analyzed and compared data from four different lithic assemblages dating between MIS3 and MIS2, including IUP and later UP variants. The results of our diachronic analysis of cutting-edge efficiency suggest that in the Tolbor Valley, larger IUP blanks were made relatively more efficiently than smaller ones, and that during the later stages of the UP in the region there was a gradual shift toward the economization of smaller blanks, particularly with the introduction of pressure microblades during the Last Glacial Maximum.

INITIAL UPPER PALEOLITHIC ON THE TIBETAN PLATEAU? NWYA DEVU BLADE ASSEMBLAGE AND ITS PLACE IN THE UPPER PALEOLITHIC OF CHINA

Abstract author(s): Zhang, Peiqi (University of California, Davis) - Zhang, Xiaoling (Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences) - Li, Linhui - He, Wei (Tibetan Cultural Relics Conservation Institute) - , Dawa (Nagqu Cultural Relics Bureau) - Jin, Yingshuai - Ge, Junyi (Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences) - Zwyns, Nicolas (University of California, Davis) - Wang, Shejiang - Gao, Xing (Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences)

Abstract format: Oral

The persistence of 'core and flake' technology in East Asia during most of the Pleistocene raises questions regarding the identification of the Upper Paleolithic in the region. The rare examples of the MIS 3 blade-based lithic assemblages found at Shuidonggou in northwest China and Nwya Devu on the Tibetan Plateau show a technological shift that is consistent with many other regions of Eurasia. The long-lasting phenomenon of core and flake technology indicates that blade technology is likely an exogenous element from Siberia and/or North Mongolia, and possibly represents evidence for modern human dispersal into the region. Being contemporaneous with the Initial Upper Paleolithic and following early Upper Paleolithic assemblages of the eastern Eurasian Steppe, Nwya Devu hence offers an example of technological transmission and/or population movements, expanding toward the high-elevation environments. Here we present an analysis of the macro blade productions at Nwya Devu. Our results show that the assemblage is characterized by a relatively low technological investment in core preparation and maintenance and tool modification. In combination with the proximity of raw material source, it is likely a lithic workshop. The reduction sequence observed generally aligns with the generic Upper Paleolithic blade productions from the Steppe. Yet, it also differs from the typical Initial Upper Paleolithic from Mongolia and Siberia, for example, the lack of asymmetrical reduction methods and external platform edge preparation. It has little evidence of Levallois-like elements described in the assemblages from Shuidonggou locality 1. These differences might be related to Nwya Devu's site function that may not fully reflect technological features of the industry, technological variations across long-distance transmission, or multiple dispersal scenarios into East Asia.

A RADIOCARBON CHRONOLOGY FOR THE LRJ AT RANIS ILSENHÖHLE, GERMANY

Abstract author(s): Fewlass, Helen (Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology; Ancient Genomics Lab, Francis Crick Institute) - Weiss, Marcel (Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology; Institut für Ur- und Frühgeschichte, Friedrich-Alexander-University Erlangen-Nürnberg) - Talamo, Sahra (Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology; Department of Chemistry G. Ciamician, Alma Mater Studiorum, University of Bologna) - Lauer, Tobias (Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology; Terrestrial Sedimentology, Department of Geosciences, University of Tübingen) - Smith, Geoff (Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology; School of Anthropology and Conservation, University of Kent) - Stahlschmidt, Mareike (Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology; Department of Evolutionary Anthropology, University of Vienna) - Pederzani, Sarah (Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology; Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, IUBO-AG, University of La Laguna) - McPherron, Shannon (Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology) - Schüler, Tim (Thuringian State Office for the Preservation of Historical Monuments and Archaeology) - Hublin, Jean-Jacques (Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology; Chaire de Paléolithique, CIRB - UMR 7241 - U1050, Collège de France)

Abstract format: Oral

The Middle-Upper Palaeolithic (MPUP) transition marks a technological turnover in Eurasia between ~50-35 ka cal BP that accompanied the expansion of *Homo sapiens* into the continent and the subsequent disappearance of Neanderthals. Archaeological and genetic discoveries in recent years indicate a complex scenario of at least two incursions of *Homo sapiens* entering Europe prior to 40 ka. Studies of 'transitional' technocomplexes from this time period are crucial to resolving the behavioural dynamics of this population turnover, but many debates remain as to their makers. One such technocomplex, the Lincombian-Ranisian-Jerzmanowician (LRJ), is present in sites across north-west and central Europe from the UK to Poland. The makers of the LRJ are as-yet unresolved and few LRJ sites have a well-refined chronology, although most dates fall between ~44-40 ka. Ranis Ilsenhöhle in Thuringia, Germany is one of the typesites of the LRJ technocomplex and is known for its assemblages coming from excavations in the 1930s. Between 2016-2022 new excavations were undertaken at the site with the aim of refining the stratigraphy and producing a reliable chronology. Here we present an extensive set of radiocarbon dates from newly excavated material at Ranis which securely places the LRJ-associated layers in the interval from ~47-43 ka cal BP. This makes the LRJ at Ranis older than other LRJ sites and contemporary with the Initial Upper Palaeolithic and *Homo sapiens*

at Bacho Kiro Cave in Bulgaria (~46-43 ka cal BP) and the Zlatý kůň individual in Czech Republic (~45 ka). The new chronology provides an important framework for investigations of the artefact and faunal assemblage at the site, and the importance of Ranis in the wider context of the MPUP transition in Eurasia.

12 ARTIFACTS WITHOUT A HOMETOWN. RETHINKING THE LATE MIDDLE PALEOLITHIC AT OSCURUSCIUTO ROCK-SHELTER (SOUTHERN ITALY)

Abstract author(s): Carmignani, Leonardo - Soressi, Marie (University of Leiden, Faculty of Archaeology, Human Origins Group) - Ronchitelli, Anna Maria - Boschini, Francesco (Università degli Studi di Siena, Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, Unità di Ricerca di Preistoria e Antropologia)

Abstract format: Oral

The end of the Middle Palaeolithic in Europe is marked by the emergence of major cultural shifts that are concurrent to the replacement of local Neanderthal populations by *Homo sapiens* between 50 and 40 thousand years ago (kya). This diversification of cultural trajectories at the end of the Mousterian affects different regions of Europe. The Italian peninsula is a key region because it attests to some of the latest evidence of Neanderthal occupation and the Uluzzian techno-complex related to *Homo sapiens* - which partially anticipated a wider technological replacement process that is later concretized with the onset of the Aurignacian industries.

Factors that have played a role in driving changes in Late Mousterian industries are hotly debated, as is the question of relationships between Europe's so-called transitional industries and the earliest Aurignacian industries.

During the last years, the Uluzzian has catalyzed the attention in discussions about the demise of Neanderthals and the arrival of *Homo sapiens* in Italy, overshadowing the lesser-known technological variability that characterizes the late Middle Paleolithic.

Here, we report the results of the stone tool technology from the latest layers preserved at Riparo l'Oscurusciuto in southern Italy (research directed by the University of Siena, DSFTA). These layers have been previously published as Late Mousterian on the basis of a preliminary techno/typological analysis of a small number of artifacts. Our analysis of the entire assemblage(s) shows the presence of original technological features that cannot be associated with the classical definition of Mousterian. In fact, several techno-typological aspects match with some slightly older lithic assemblages found in south-eastern France, namely, the Neronian techno-complex of Grotte Mandrin and surrounding sites. For the time being, the question of the meaning and origin of these similarities can lend themselves to different interpretations: technological convergences, population movement, or indirect contact.

13 THE EARLY UPPER PALAEOOLITHIC IN THE BASQUE CROSSROADS. THE FIRST STATION, CHATELPERRONIAN?

Abstract author(s): Arrizabalaga, Alvaro (Area de Prehistoria. Universidad del País Vasco - UPV/EHU) - Prieto, Alejandro - Calvo, Aitor - Dominguez-Ballesteros, Eder (Universidad del País Vasco - UPV/EHU) - De-Lombera, Arturo (Universidade de Santiago de Compostela - USC) - Libano, Iñaki (Edestiaurre Elkarte) - Sanchez, Aitor - Iriarte-Chiapusso, Maria (Universidad del País Vasco - UPV-EHU; IKERBASQUE Basque Science Foundation)

Abstract format: Oral

The Basque Crossroad is located on both slopes of the western Pyrenees and constitutes a critical region for understanding the settlement dynamics of the Iberian Peninsula by the *Homo sapiens*. Over the last thirty years, the sequence of the Middle to Upper Palaeolithic transition (45-33 ky cal BP) has been well defined in a succession of Mousterian, Chatelperronian, Proto-Aurignacian, Early Aurignacian and Evolved Aurignacian thanks to the stratigraphies of Gatzarria, Isturitz, Polvorín or Labeko Koba, among others. Due to the absence of human fossils in the stratigraphies, as mentioned earlier, the most relevant information is on the lithic industry and its evolution in terms of Raw Material procurement, Typometry, technological exploitation and classic Morpho-Typology.

Based on the controversial context of the Neanderthal burial at Saint-Césaire (France), the automatic ascription of the Chatelperronian industry to the last Neanderthals has been extended. At the same time, and despite the virtual absence of associated human remains, the Proto-Aurignacian and the whole Aurignacian have been assigned to the first groups of Anatomically Modern Humans. However, the lithic record in our regional environment shows an abrupt cut-off between the most recent Mousterian (50-45 ky cal BP, in sites such as Lezetxiki, Axlor or Arrillor) and the technological modes (in a broad sense) typical of the Chatelperronian. Likewise, the evolution between the Chatelperronian and the Proto-Aurignacian, wherever they stratigraphically overlap (Labeko Koba, Gatzarria or, outside the Basque region, Cueva Morín), shows traits of continuity. In this communication, we will propose a debate and reflection about the bases that should govern our taxonomic assignments and how we hierarchize the information from different fields, such as Evolutionary Anthropology and Material culture.

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THE VIEW FROM THE WEST: RE-THINKING THE CHÂTELPERRONIAN THROUGH THE LENS OF THE EUROPEAN INITIAL UPPER PALAEOLITHIC

Abstract author(s): Djakovic, Igor - Roussel, Morgan - Soressi, Marie (Leiden University)

Abstract format: Oral

The Initial Upper Palaeolithic (IUP) complex is emerging as a key to understanding the eventual replacement of Neandertals by anatomically modern humans (AMH) across Eurasia. In Europe, IUP-type assemblages are increasingly being considered a proxy for the first AMH occupations in the region. Similarities in bone tools and personal ornaments between the IUP at Bacho Kiro and the Châtelperronian of Grotte du Renne (France) has been proposed as supporting some form of cultural influence by early European AMHs onto late Neandertal populations. Here, we present a point-by-point comparison of Châtelperronian lithic technology with what is known for the European IUP. We highlight that the Châtelperronian reflects a substantially more well-developed 'Upper Palaeolithic' lithic industry in all observable metrics and, in this light, discuss the relevance of this observation to current explanatory models for the onset of the Upper Palaeolithic in France and northern Spain.

We stress that questions concerning the 'origin' of the Châtelperronian and the emergence of the Upper Palaeolithic in this region must be re-framed and re-evaluated in the light of rapidly evolving genetic, paleoanthropological, chronological, taphonomic, and techno-cultural data. To this effect, we make the case that current conceptions surrounding the nature and origin of the Châtelperronian should be reconsidered – and that this is irrespective of the question of the biological author(s) of this industry. Finally, we conclude with a brief discussion on the relevance of geographic patterning in the development and consolidation of Upper Palaeolithic technological behaviours across Europe.

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ARLANZIAN. A NEW INDUSTRY FROM INLAND IBERIA WITH INITIAL UPPER PALAEOLITHIC FEATURES

Abstract author(s): Sanchez Yustos, Policarpo (Universidad de Valladolid) - Marín-Arroyo, Ana Belén (Universidad de Cantabria) - Arnold, Lee (University of Adelaide) - Luque, Luis (Universidad de Alcalá de Henares) - Kehl, Martin (University of Cologne) - López Saéz, José Antonio (CCHS CSIC) - Carrancho-Alonso, Ángel (Universidad de Burgos) - Demuro, Martina (University of Adelaide) - Sanz-Royo, Alicia (Universidad de Cantabria) - Buckley, Michael (University of Manchester)

Abstract format: Oral

The Arlanzian industry found in interior Iberia calls into question prevailing views on the transition from the Middle Palaeolithic to Upper Palaeolithic in Southwestern Europe and sheds light on the intricacies of this process. This discovery is noteworthy for several reasons: (i) it pioneers the development of Upper Palaeolithic stone tool technologies in Iberia while still incorporating elements of the Middle Palaeolithic; (ii) it lacks a counterpart in Iberia, but has similarities with the Initial Upper Palaeolithic industries in Western Eurasia; (iii) it is located in the Iberian hinterland (Arlanza Valley), being the first and earliest industry with Upper Palaeolithic features found south of the Ebro Basin; (iv) it predates the end of the Mousterian in Iberia, including the bio-geographic region where it is located, suggesting that their makers might have coexisted with geographically close Neanderthal groups. Further research is required to fully understand the origin of the Arlanzian industry.

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A MATTER OF TIME. HANDLING CHRONOLOGICAL DATA IN ARCHAEOLOGY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Scholtus, Lizzie (Institut für Ur- und Frühgeschichte, Christian-Albrecht-Universität; UMR-7044 Archimède, Université de Strasbourg) - Dumont, Léonard (Ghent University, Department of Archaeology; Université de Bourgogne, UMR 6298 ARTEHIS) - Nakoinz, Oliver (Institut für Ur- und Frühgeschichte, Christian-Albrecht-Universität; Johanna Mestorf Akademie)

Session format: Regular session

The notion of dating, chronology, phase or period has always been present in archaeology. From the very beginning of the discipline, archaeologists sought to classify their discoveries, but also to relate them to known texts and events for historical periods and then to the ages established by C. J. Thomsen for prehistory (Thomsen 1836). Even now every archaeologist must deal with chronological data.

Many systems were invented in Europe since the typo-chronological method was invented by O. Montelius (1899) and many still co-exist today (Roberts et al. 2013), making archaeologists work difficult when dealing with several cultural regions. Absolute dating can be provided thanks to various scientific methods (14C, dendrochronology, OSL...), but will not be able to replace relative chronologies completely for decades. It can be challenging to make sense of these multiple types of data coming from these different sources developed during the past century.

Although researchers have recently questioned the construction of these chronologies (Lehoërf 2008), or how to refine and improve them with the help of typo-chronology or absolute dating methods (Pare 2008), it seems to us that there is little questioning in the scientific literature about the very use of disparate chronological data or about the interactions between the different tools and methods in archaeological research. Furthermore, with the development of computer technology, archaeological data is becoming more numerous and heterogeneous, but can now also be used on much larger time scales or geographical areas more easily.

We wish to discuss the different forms that chronological data takes and the different techniques for processing and interrogating it. In particular, we aim to gain an overview of different kinds of chronological information, ways of structuring chronological data and formats for storing them as well as of approaches and software to handle heterogeneous chronological systems and information.

ABSTRACTS

1 CONTRIBUTION OF ORNATE BRACELETS TO THE CHRONOLOGICAL SYSTEM OF THE METAL AGES

Abstract author(s): Georges, Vincent (INRAP - National Institute for Preventive Archaeological Research) - Cayrol, Arnaud (Geosciences, Luxembourg)

Abstract format: Oral

Many geometric motifs are recorded on ornate bracelets (website: graphbz.eu ; Georges 2020). Throughout the Metal Ages, complex organizations are in mutation with different patterns emerging. With the knowledge of the absolute chronology, we can study these changes in real time at the scale of Europe. With ornate bracelets, we can see that all countries aren't active at the same time. It exposes some regional typo-chronologies. Our purpose is to show some of those movements from the Bronze and Iron Ages. The underlying idea deals with the distribution of wealth. The pursuit of historic truth requires us to locate the mobility of the spatio-temporal units subject to a particular form of prosperity somewhere on the absolute chronology scale.

- Georges 2020 : Vincent GEORGES, "Un exemple de référentiel graphique de l'âge du Bronze à l'âge du Fer : enjeux et méthodes appliquées à l'Europe", In : Veronica Cicolani (ed.), UISPP PROCEEDINGS SERIES VOLUME 9 – Mobility and Exchange across Borders : Exploring social processes in Europe during the first Millennium BCE, theoretical and methodological approaches UISPP XVIII World Congress 2018 (4-9 Juin 2018, Paris) Sessions XXXIV-4 and 5, Oxford, Archaeopress, 2020, p. 96-116.

2 ROBUST BAYESIAN ALTERNATIVES TO AORISTIC ANALYSIS

Abstract author(s): Crema, Enrico (University of Cambridge)

Abstract format: Oral

The prominence of dates-as-data approaches testifies to how the increasing availability of radiocarbon and other scientifically dated samples can promote new research agendas and bring life to legacy data. Yet, the majority of the archaeological records are still dated by attributing artefacts to periods and phases. From a methodological point of view, examining datasets with these relative chronologies can be challenging due to uneven granularity and uncertainty levels. The most commonly adopted solution to this problem is to employ the so-called Aoristic analysis, a technique initially developed in crime science that was introduced in archaeology nearly two decades ago that has recently seen an increasing number of applications. In its simplest form, aoristic analysis consists of defining a time-span of existence for each artefact and subsequently providing probabilistic weights to each observation based on the length of the time-span and the temporal resolution of interest. These weights are then often aggregated to produce time series representing changes over time in the frequency of particular artefacts. Aoristic analyses have, however, two significant limitations. Firstly, in contrast to its original assumption within crime science, chronological uncertainty in archaeology are not-random. Periods and phases can have substantially uneven durations, and even when aoristic analyses are employed, substantial shifts in patterns will inevitably match with transitions between the underlying relative chronology sequences (a problem known as modifiable reporting unit problem; see Bevan and Crema 2021). Secondly, aoristic-related analyses are non-inferential; they attempt to account for chronological uncertainty but do not consider the impact of sampling error. This paper will highlight the consequences of these limitations and advocate for an alternative approach based on Bayesian measurement error models. The robustness of this solution will be demonstrated via simulated datasets and a case study on the demographic impact of rice farming in prehistoric Japan.

3 HANDLING RELATIVE CHRONOLOGICAL DATA

Abstract author(s): Hillmann, Laurenz (Institute of Pre- and Protohistoric Archaeology, Kiel University) - Nakoinz, Oliver (Johanna Mestorf Academy, Kiel University)

Abstract format: Oral

Although, scientific dating becomes more and more important in archaeology, typological and relative dating is still relevant and will not be replaced in the next time. This leads to the problem of how to include this kind of chronological information in an optimal way in modern archaeological databases. This paper discusses some of the issues of storing relative chronological information in databases and offers a simple and still powerful solution. The solution is based on the experience with several archaeological databases and was developed for the Kiel Fortification Database in recent years.

First, different possible solutions including specific and complex data types are discussed and advantages, as well as drawbacks, are presented. None of these traditional solutions is simple and powerful at the same time. Either it is simple and not capable of storing a sufficient amount of information or it is too complicated to be useful. Besides the information about specific phases, the organization hierarchy of relative phases and the probability of being true of the information has to be considered. Furthermore, the system has to be capable of coping with different chronological systems.

The proposed solution is a text field containing a description using a simple description language for chronological information. This approach is similar to the well-known text format for geographical information for GIS. The text fields with this kind of description can be filed and analysed without specific software, but an R package that is developed along with the database allows for more efficient analysis.

We invite people to join this project and hope for helpful feedback.

4 THE ESSENCE OF TIME. TOWARDS A DEEPER UNDERSTANDING OF THE 14C PROBABILISTIC TIME DETERMINATIONS FROM ALBA IULIA-LUMEA NOUĂ SITE (ROMANIA)

Abstract author(s): Condurateanu, Marian - Gligor, Mihai (1 Decembrie 1918 Alba Iulia University)

Abstract format: Oral

Time is of the Essence in Archaeology since the advent of 14C determinations at the beginning of the second half of the XXth century. The abundant available radiocarbon data that can nowadays be easily modeled in sophisticated on-line environments is accompanying almost all literature being published in the field. What if there is more underneath those ubiquitous gray 14C graphics, what if we could extract more knowledge from the underlying data behind modeled and un-modeled time than we already do? What is their core meaning? What is the essence of probabilistic time?

Alba Iulia-Lumea Nouă, situated in the center of Romania, is a well-known Eneolithic site where a number of primary and secondary burials and mass graves containing a total of more than a hundred individuals of all ages and both sexes have been excavated between 2003 and 2019. The deceased, all belonging to the Early Eneolithic Foeni cultural group (4600-4400BC), were typically found in commingled human remains archaeological contexts, many of the skulls displaying evidence of perimortem trauma.

35 14C data from the human remains were used to build a time model and propose a new archaeological narrative of the site based on a novel methodology that relies on the determination of the absolute maximum probability year and exploits the intrinsic mathematical properties of the numeric data that lies beneath the well known calibration curves provided by OxCal.

5 IN SEARCH OF TIME LOST - CULTURAL TRAJECTORY IN THE COPPER AGE ON THE GREAT HUNGARIAN PLAIN

Abstract author(s): Ridge, William (University of Illinois at Chicago) - Gyucha, Attila (University of Georgia)

Abstract format: Oral

Archaeology traces past cultural change, commonly identifying discontinuities in material culture and treating them as chronological markers. This simple pattern recognition leads to the creation of distinctive cultures and well-defined periods that come to characterize regions. The cultures are joined together like pieces in a puzzle, regularly reconsidered and rearranged, particularly since the introduction of absolute chronological methods.

The basic story of this paper is simple and familiar to many. Recent radiocarbon dating studies have reshaped the chronology and refuted the traditional notion of temporally distinct cultural units on the Great Hungarian Plain during the first half of the Copper Age. While the Tiszapolgár and Bodrogkeresztúr cultures were previously believed to have occurred sequentially during 4500-4000 BC and 4000-3700 BC, recent studies have demonstrated remarkable synchronicity between the two units and placed them both between 4500-4000 BC (i.e., Early Copper Age). This

has not only complicated the relationship between the Tiszapolgár and Bodrogkeresztúr cultures but has also revealed a significant cultural break in many parts of the Great Hungarian Plain sometime during 4000-3600 BC.

In this paper, we take a multiscalar perspective to reconstruct the chronological and cultural trajectory of the Copper Age using data from sites in the Körös Basin of the Great Hungarian Plain collected systematically over the past two decades. First, we will outline the underlying dynamics that resulted in diverse cultural pathways between 4500 and 4000 BC. Then, we will examine how the existing evidence can be interpreted in light of the archeological gap in the first centuries of the 4th millennium BC.

6 SHORELINE DATING FENNOSCANDIAN STONE AGE SITES AND THE R-PACKAGE SHOREDATE

Abstract author(s): Roalkvam, Isak (University of Oslo)

Abstract format: Oral

Isostatic rebound resulting from the retreat of the Fennoscandian Ice Sheet has led to a process of continuous and rapid relative sea-level fall in large areas of Fennoscandia throughout prehistory. When this is combined with the observation that most coastal Stone Age sites in the region appear to have been located on or close to contemporary shoreline when they were in use, this can be drawn on to assign an approximate date to the sites, based on their elevation above the present sea-level. Since the early 1900s this method, also known as shoreline dating, has been widely applied. A new, probabilistic method for shoreline dating sites on the Norwegian Skagerrak coast has recently been published in Roalkvam (2023) and the accompanying R-package shoredate has been released (<https://cran.r-project.org/package=shoredate>).

This contribution will present how shoreline dating was operationalised in the paper, the assumptions underlying its application, and how these dates can be achieved and handled with shoredate. While shoreline dating is a well-known technique in Fennoscandian archaeology, it is useful to present the concept to a wider audience, as a host of questions pertaining to the method still remain to be explored. This concern issues relating to its applicability and reliability, future avenues along which to test, extend and improve it, as well as how the dates achieved with shoreline dating can be combined with other kinds of temporal data.

- Roalkvam, I. 2023 A simulation-based assessment of the relation between Stone Age sites and relative sea-level change along the Norwegian Skagerrak coast. *Quaternary Science Reviews* 299:107880.

7 NOT ALWAYS AS IT SEEMS: DIFFERENCES IN CHRONOLOGICAL DATA FROM AN IRISH CRANNOG

Abstract author(s): Barrett, Marie-Therese - Brown, David (Queen's University Belfast)

Abstract format: Oral

Various methods of dating are used to establish the chronology of a site. Any chronology is however constrained by the availability of datable material. Some sites are limited to artefact typologies whereas for others absolute dating can be achieved. While all chronological data is valuable it is not all equal making inter-site comparisons problematic.

Here we show how the chronological narrative of Drumclay crannog changes based on the different forms of dating. This waterlogged site was located in the north of the Ireland and has a chronology spanning the 9th to 17th century AD. The site was originally dated by artefact typologies and radiocarbon dating. A dated sequence was also obtained by dendrochronology of long-lived oaks. Tree-ring analysis of short-lived timbers used in the construction of the site, has provided an annual chronology of construction and occupation. This absolute chronology was achieved by combining different forms of chronological data including tree-ring analysis, radiocarbon dating, wiggle-match modelling and the identification of the 774/775 AD 14C spike.

The results of this multifaceted approach to chronology, has revealed the pace at which the site developed on a year by year basis. This provides an opportunity to test different types of chronological data against an absolute timeline. We will also consider the issues that arise when comparing inter-site chronologies composed of different types of chronological data.

8 EXPLORING DIFFERENT LEVELS OF TEMPORAL CHALLENGES IN IMPLEMENTING AN INFORMATION SOLUTION FOR AN INTERDISCIPLINARY RESEARCH ENVIRONMENT

Abstract author(s): Strohm, Steffen (Department of Computer Science, Kiel University - CAU) - Buening, Hartwig (Institute of Pre- and Protohistoric Archaeology, Kiel University - CAU) - Renz, Matthias (Department of Computer Science, Kiel University - CAU)

Abstract format: Oral

Digital research data management has accelerated in moving forward following the notion of Open Data and FAIR principles. Both of these concepts enable faster sharing of data as well as results, easier collaborations on the same

informational sources and opening more efficient ways for scientific work. Project or domain specific repositories for collecting research data have become popular tools in achieving these goals. The Collaborative Research Center (CRC) 1266 “Scales of Transformation” at Kiel University brings together experts from Archaeology, Archaeobotany, Computer Science, Ecology, Geography, Geology, Geophysics and more domains to identify and analyse transformational patterns in human-environmental interactions from 15000 BCE to 1 BCE. One special focus is the interdisciplinary usage of science data. For this purpose, a research data management solution was set up including a standardized meta data catalogue, adequate processes, roles and policies for the usage, retrieval and storage on basis of standardized data formats to assure best benefit for scientific work and fulfilling the FAIR principles. The presentation will show our two-step solution approach to set up an information system for these goals. First step was a science-focused data repository that meets the FAIR requirements. The second step is an integrational framework which enables researchers to select, merge, explore and analyze data sets from this repository. This raises challenges in identifying overlaps in space and time between data sets. While spatial information usually comes in a hand full of global or local coordinate notations, the temporal dimension is a tougher task. While a larger variety of chronologies needs to be translated when absolute dating is provided, there is also the challenge of relative dating which might only have one distinct or fuzzy reference point in any chronology based on absolute dating. We want to share our perspectives on these challenges and discuss our solution approach.

9 INTEROPERABLE DATA AND CHRONOLOGIES: SHARING ARCHAEOLOGICAL INFORMATION

Abstract author(s): Scholtus, Lizzie (XSCAPE Project on “Material Minds” - ERC 2020 Synergy Grant 951631; UMR-7044 Archimède, Université de Strasbourg; Institut für Ur- und Frühgeschichte, Christian-Albrecht-Universität) - Bernard, Loup (UMR-7044 Archimède, Université de Strasbourg)

Abstract format: Oral

The ArkeoGIS platform, and its open equivalent ArkeOpen, allows researchers to share their geo-referenced data and makes it interoperable by relying on a defined, precise and closed (though evolving) thesaurus. It applies the FAIR principles of open science by using open standards and norms, web semantics and Link Open Data to enable interoperability with other platforms and data accessibility.

The data shared on these platforms is by nature heterogeneous. It comes from different discovery contexts, different regions of the world, different chronological periods and sometimes even different research disciplines. While the establishment of a common descriptive thesaurus, although not obvious, does not pose specific insurmountable problems, the establishment of an interoperable chronological system, adapted to different levels of interpretation and which can be used by all users, has raised more questions.

The proposed solution consists of setting up a multi-chronological platform in which the user can select (to consult or share) the chronology closest to his or her study area and period. The switch from one chronology to another applies to all imported data and is also applied when querying by chronological phases. The elaborate system, based on absolute dating (whether precise, by range or even indeterminate), makes it possible to align heterogeneous data on different relative chronological models, thus enabling their sharing and interoperability.

477 WITHIN THE COST FOR PEOPLE AND EARTH: CLIMATE CHANGE AND ARCHAEOBOTANICAL HERITAGE

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Berihuete-Azorin, Marian (IPHES-CERCA) - Martín Seijo, María (Departamento de Ciencias Históricas, Universidad de Cantabria) - Kerfant, Céline (Universitat Pompeu i Fabra) - Piezonka, Henny (Anthropologische Archäologie Institut für Ur- und Frühgeschichte Christian-Albrechts-Universität zu Kiel)

Session format: Regular session

Climate change, with its expression in the current mounting climate crisis, is threatening life on Earth as we know it. It is already affecting millions of people, their environments, and livelihoods, with extreme weather events: drought and heat in some places; torrential rains and flooding in others. Beyond these devastating consequences for humanity and the planet, climate change as a hazard to archaeological heritage is a topic of concern among archaeologists and related professionals.

This especially impacts the delicate bioarchaeological remains at archaeological sites across different ecological zones. Droughts affect the valuable record kept by waterlogged materials, whilst the accelerating thawing of permafrost results in the loss of invaluable archaeological and archaeobiological remains. The endangered materials include organic plant debris that constitute invaluable and irreplaceable archives for past plant use, management, and roles in diverse – and often sustainable – economies.

As specialists in archaeobotanical heritage, we must prepare to fight this situation BY identifying and initiating courses of action. Firstly, we need to develop a plan to protect the information deposited IN these archaeological archives:

Where do we have to intervene most urgently, how much time do we have until it is too late? Secondly, a better understanding of how past communities dealt with climate change may strengthen our own resilience and ability to cope with it. In this respect, reference to Traditional Ecological Knowledge of today's Indigenous and descendant communities in different ecozones (e.g., nurturing of the local biodiversity) is an essential pillar. Finally, this archaeobotanical and climate change binomial also has a logistical dimension: How are we going to face the increase in conservation costs?

Archaeologists and other scholars wishing to contribute on any of these topics are welcome to submit their proposals for oral and poster communications.

ABSTRACTS

1 **ARCHAEOBOTANY IN AN ERA OF CHANGE AND CHALLENGE: FRUITS OF THE PAST, SEEDS FOR THE FUTURE**

Abstract author(s): Berihuete-Azorin, Marian (Department of Prehistory, Autonomous University of Barcelona - UAB; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Kerfant, Cèline (Department of Humanities, Universitat Pompeu Fabra) - Robledo, Andrés (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Burguet, Aitor (Department of Archaeological Sciences, Faculty of Archaeology, Leiden University; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Revelles, Jordi - Garay, Blanca (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Rodríguez-Antón, David (Department of Prehistory, Autonomous University of Barcelona - UAB; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Fernández Iriarte, Tomás - Expósito, Isabel - Speciale, Claudia (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art)

Abstract format: Oral

Current dramatic climate events are affecting the integrity of archaeological heritage. Archaeobotanical record, already fragile by nature, is especially sensitive to these processes and to the broader changes in temperature and precipitation that are rapidly generalizing. One of the consequences is the irreparable loss of precious information about past economies and human-environment interactions. However, beyond that, this information has the potential to inform us on questions relevant for the present and the future.

In the first place, this information may help us understand how past communities have coped with climate changes in the past and which resilience mechanisms they developed regarding plant use and management. In the second place, this can serve as a basis to rethink our economic system and implement new circuits and networks to face current challenges and mitigate their consequences (e.g., re-adopt forgotten crops, implement circular economy models).

In this work, we intend to offer a thoughtful insight into the potential of the main proxies of Archaeobotany to shed light into the above-mentioned questions, which knowledge we will lose by losing the chance to study them and what people are already doing to preserve this information. At the same time, we call for action to milder the effects and fight against climate change and, finally, we want to draw archaeologists' attention into the importance of sampling and recovery to protect archaeobotanical heritage.

2 **THE IMPORTANCE OF COLLECTING PHYTOLITH SAMPLES IN BOTH CHINESE AND AUSTRALIAN ARCHAEOLOGICAL PLACES**

Abstract author(s): Bestel, Sheahan (Independent Researcher)

Abstract format: Oral

Archaeological heritage is under threat worldwide due to factors ranging from climate change to urbanisation. It is vital that we preserve archaeological objects and places before they are gone for good. Archaeobotanical remains such as phytoliths may preserve evidence of foods gathered in archaeological sites or processed around campfires, or may represent the local environment. Phytoliths can provide possible evidence of grain or crop preparation and processing including of rice in southern China, and of *Setaria* or *Panicum* millets or other gathered or wild foods in semi-arid Australia. Sediment samples from which phytoliths may be extracted are not always collected and, if collected, may not always be processed: the valuable information that may be gained from microscopic paleoenvironmental information is sometimes overlooked. Phytolith remains in particular can be quite susceptible to changing climatic or environmental conditions such as rising lake water levels. I will discuss how climate change and urbanisation can impact preservation and recovery of phytoliths in both Australia and China in semi-arid and waterlogged sites.

3 SEEDS LOST AND FOUND – AND LOST AGAIN?

Abstract author(s): Lempiäinen-Avcı, Mia - Koivisto, Satu (University of Turku)

Abstract format: Oral

People have changed the environment, utilised vegetation and influenced biodiversity throughout the history. Due to human activity, plant and animal species around the world are steadily disappearing. It has been predicted, that if we do not manage to flatten the curve of biodiversity loss, there will be e.g. widespread hunger.

The rapid collapse of ecosystems has been recognised as a significant crisis for archaeological heritage. Therefore, the (pre)historic botanical information is also in danger to get lost. However, archaeobotanical research is among the fundamental tools to study interactions between humans and nature. Anthropogenic soils form paleo-archives, which provide excellent long-term data for biodiversity research. Therefore, surviving archaeological plant finds and the data they contain should be studied systematically from the excavations before we lose that material. This botanical information is vital to safeguarding our current natural resources and to addressing present and future ecological challenges, for example in food production.

The aim of this talk is to present the archaeobotanical results from a Neolithic wetland site (6000-2000 cal BC) in Humpilla, Finland, where contemporary drainage works have threatened the preservation of unique archaeological finds and well-preserved paleo-archives. Also, this presentation discusses the solutions that archaeobotanical finds can give to future demands of resilient plant-based food production.

4 JUA HERBARIUM ETHNOARCHAEOLOGICAL COLLECTION AS A KEY COMPONENT FOR SOUTH-CENTRAL ANDES BIOCULTURAL HERITAGE CONSERVATION AND SAFEGUARDING

Abstract author(s): Musaubach, Maria (National University of Jujuy; Institute of Andean Ecoregions - CONICET-UNJu) - Sato, Héctor (Cátedra de Botánica General – Herbario - JUA, Facultad de Ciencias Agrarias - UNJu)

Abstract format: Oral

This paper analyzes the key role of biocultural collections for archaeobotanical research and their potential usefulness in generating actions to reduce the effects of the climate crisis and related issues. JUA Herbaria („Jujuy-Agronomía“) is situated at the Agrarian Science Faculty (UNJu) since 1981. It is registered in the Index Herbariorum and belongs to the Argentinian National Network of Biological Collections. Recently, it has started an Ethnoarchaeological Collection which has initiated as a small local collection with the purpose of safeguarding the biocultural heritage, systematizing and disseminating the traditional knowledge associated with Andean Crops and their foodways. Specimens of Andean Crops are collected through ethnobotanical and ethnoarchaeological approaches. The knowledge and culinary practices related to the collected specimens are also studied. So far the collection is composed of several genera of Andean Crops, either in their natural state or as culinary preparations elaborated from them. In dialogue with the people who are the bearers of this heritage, we generate actions that enhance the valorization, safeguarding and visibility of the elements of the Culinary Cultural Heritage of the Quebrada de Humahuaca, including nutritional aspects of the culinary products of the Quebrada, as well as symbolic, ideological and socioeconomic aspects. By systematizing the collection and the reference material, we achieved greater precision in the archaeobotanical identification of archaeological remains of preparations based on Andean plants, and the foodways. In addition to the usefulness of this comparative material for archaeobotanical work, its description, recording and publication in repositories allow us to catalog and add value to this community heritage.

5 MONITORING THE IMPACT OF WATER-TABLE FLUCTUATION ON THE WATERLOGGED LAYERS OF LA DRAGA (BANYOLES, SPAIN)

Abstract author(s): Piqué, Raquel (Universitat Autònoma de Barcelona) - Andreaki, Vasiliki (Archaeology of Social Dynamics group, Institució Milà i Fontanals, CSIC; Departament de Prehistòria, Universitat Autònoma de Barcelona) - García, Irene - Palomo, Antoni (Departament de Prehistòria, Universitat Autònoma de Barcelona) - Rabago, Daniel (Universidad de Cantabria; Archaeology of Social Dynamics group, Institució Milà i Fontanals, CSIC) - Terradas, Xavier (Archaeology of Social Dynamics group, Institució Milà i Fontanals, CSIC)

Abstract format: Oral

This research takes part of the European project „Woodpdlake. Archaeological Wooden Pile-Dwelling in Mediterranean European lakes: strategies for their exploitation, monitoring and conservation“ (JPICH Conservation and Protection Call), whose main objective is to evaluate the impact of climate change on the preservation of lacustrine sites in the Mediterranean area, paying special attention to the agents and processes of degradation of organic materials. In the frame of the project several actions have been carried out for monitoring the water table fluctuation on the shore of Lake Banyoles and its effect on the waterlogged layers of the Early Neolithic of La Draga (Banyoles, Spain). La Draga site has provided an outstanding sample of organic remains dated 5300-4900 cal BC, however the conservation of organic materials is determined by the proximity of the archaeological layers to the lake and the fluctuation

of the water table. Understanding how this fluctuation affect at the different areas of the site is crucial for determine the future excavation programme as well as for developing strategies of on-site conservation. In this paper we present the first result of the data gathered trough the probes placed at the site to monitor the water-table fluctuation and thus determine the risk of degradation of the layers with organic material.

6 CAN ARCHAEOBOTANY AND ARCHAEOLOGY GROUND A PROJECT TO PROMOTE CIRCULAR ECONOMY AND BIODIVERSITY? THE INTERTWINED PROPOSAL

Abstract author(s): Martin Seijo, Maria (Universidad de Cantabria) - Berihuete Azorín, Marian (Universitat Autònoma de Barcelona)

Abstract format: Oral

Traditional forms of ecological knowledge and craft practice should be at the centre of the current debates about biodiversity preservation and circular economy. INTERTWINED is focused on direct and indirect archaeological evidence of basket- and cordage-making using plant-based materials from Western Mediterranean and dated between Iron Age (IA) and Early Roman Empire (ERE). By focusing on these craftworks, we will try to deepen our understanding on the intertwined relationship among people, plants, and crafts. This multi- and interdisciplinary project integrates archaeological, ethnographical, and ethnobotanical evidence with the experimentation developed by artisans. It seeks to promote research, development and innovation applied to the conservation and sustainability of the important archaeological, historical, cultural and social heritage of the Iberian Peninsula, with the specific focus on crafts and raw plant materials. This investigation will contribute to the social and economic development of the territories under study, mostly rural areas affected by ageing and depopulation, by combining archaeological and ethnobotanical research, experimentation and artisanal work. The objectives are aligned with the transition to a circular economy, it will foster activities aiming at (1) increasing the durability, reparability, upgradability or reusability of products, in particular in designing and manufacturing activities; and (2) raising of the recyclability of products. In alignment with the European Cultural Heritage Green Paper (ICOMOS 2021) by incorporating social and cultural aspects to the circular economy actions additional benefit of enlisting Europe's robust, human-centred culture and heritage sectors as co-creators of a cleaner and more sustainable Europe. Most of the plant-crafts also require a careful management of crops, woodlands or scrubland areas, and the application of silvicultural practices well documented ethnographically and archaeologically. The efficiency in the use of resources and raw materials could be improved by recovering ancient silvicultural practices and plant cultures that could eventually increase biodiversity.

480 METALS AND METALWORKING I - ARCHAOMETALLURGICAL NARRATIVES OF THE COPPER AND BRONZE AGES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Wärmländer, Sebastian (Stockholm University) - Saage, Ragnar (Tartu University) - Kurisoo, Tuuli (Tallinn University) - Wrobel Nørgaard, Heide (Moesgård Museum) - Kmošek, Matěj (Institute of Archaeology of the Czech Academy of Sciences)

Session format: Regular session

Archaeometallurgy is a multidisciplinary field where researchers from different fields, and different traditions, come together to answer questions related to ancient metals and metalworking. Most research in this field is based on metallurgical analysis, but studies involving experimental archaeology or isotope characterization for material provenance are also common. For this session we welcome full-length papers on archaeometallurgy of the Copper and Bronze Ages. In line with the overall theme of the 2023 EAA meeting, i.e. "Weaving Narratives", our aim is to focus on how metals, metalworking, and related technologies have contributed to the narratives of the Copper Age and the Bronze Age. "Narratives" should here be interpreted in a broad sense, both as the stories that we create about the past, and as the stories that past societies have created themselves. As there are many ancient stories and myths involving metals and the transformation and creation of metals, we especially invite researchers that involve literary and ethnological sources in their research. As many analytical tools have become an inseparable part of modern research, we welcome papers focusing on new methods and interesting materials. Contributions from all geographic regions are welcome, and we encourage students and young researchers to present their research projects.

1 NETWORKS AND WORKSHOPS IN BRONZE AGE SOUTHERN SCANDINAVIA: METALLURGICAL VIEWS OF FOREIGN AND LOCAL AT EUROPE'S NORTHERN FRINGE

Abstract author(s): Noergaard, Heide (Moesgaard Museum, Department of Archaeology)

Abstract format: Oral

Isotope-related research has changed our view of the Bronze Age. Lead isotopic investigation of metal artifacts revealed that Southern Scandinavia was not exploiting its copper sources; instead, it was importing metal via large-scale exchange networks from the establishment of the Bronze Age 2000 BC onwards. Though, our knowledge concerning the extent and directions of the trade is restricted from the moment that craftspeople intentionally mix, reuse and recycle the needed metal. Although in work, the necessary methods that can ignore the factor of human impact are not yet available, and time-traveling still is just a wish. But perhaps we just have asked the wrong questions? Maybe, the origin of the raw material alone won't allow us to understand the networks and relations behind metalwork. We know only little about the organisation of these contact networks and can only assume the importance of ambassadors in creating these contacts. It could be much more important to understand whether contact networks are established at a regional or national level. And whether the supply of raw materials is organised centrally or individually.

This presentation aims to present the results of several projects that applied a mixed-method approach to lead isotope data to understand workshop-specific networks in the Scandinavian Bronze Age. The question in focus is not provenance-oriented and will not shed light on the networks' starting point and extent. The focus of this presentation is the question of what is foreign and what is local from a regional and national perspective.

2 EMERGING PATTERNS IN LATE BRONZE AGE COPPER SUPPLY & ALLOY PRODUCTION IN CENTRAL BALKAN HOARDS

Abstract author(s): Mittermair, Nicole - Gavranović, Mario (Austrian Archaeological Institute) - Mehofer, Mathias (Vienna Institute for Archaeological Science; Human Evolution and Archaeological Sciences, University Vienna)

Abstract format: Oral

Late Bronze Age Balkan metallurgy within the general archaeometallurgical discipline still draws comparably little research attention. In scope of this presentation, we discuss Late Bronze Age (ca. 1400 to 900 BC) copper-based artefacts from hoards situated in the Central Balkans (Serbia) in light of new data. The paper aims to contribute significantly to the existing knowledge of Late Bronze Age metal circulation and alloying practices within this region by exploring metal compositions of finished products through analysis of minor and trace elemental contents and lead isotope ratios (ED-XRF, MC-ICP-MS).

The generated project results attest to the south-eastern Alpine area as predominant source of consumed copper. Such an intensively operated copper-supply network reaching this far west was not anticipated, especially since the cross-cultural trading lasted over centuries in spite of nearer resources available. Moreover, the raw material seems to have been used for artefact types with regional as well as supra-regional distribution.

The hoard context also allows to observe hoarding practices in detail by looking beyond archaeological and typological information. Investigations on site-specific metal composition of artefacts, shed light on distinct Bronze Age manufacturing processes, more specifically alloying. Thus, allowing conclusions to be drawn on production backgrounds of hoarded objects and enabling a better understanding of prevailing prehistoric crafting habits.

3 TRACES OF LOCAL COPPER METALLURGY IN THE COPPER AGE OF THE CARPATHIAN BASIN - INTERPRETING THE TRANSMISSION OF METALLURGICAL TECHNOLOGY

Abstract author(s): Siklósi, Zsuzsanna (Eötvös Loránd University, Institute of Archaeological Sciences, MTA-ELTE Lendület „Momentum“ Innovation Research Group) - Virág, Zsuzsanna (Budapest History Museum) - Villa, Igor (Institute of Geology, University of Bern; Centro Universitario Datazioni e Archeometria, Università di Milano Bicocca) - Nisi, Stefano (Laboratori Nazionali del Gran Sasso, Istituto Nazionale di Fisica Nucleare, L'Aquila) - Mozgai, Viktória - Bajnóczi, Bernadett (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences, Eötvös Loránd Research Network - ELKH) - Kraus, Dávid - Szilas, Gábor (Budapest History Museum)

Abstract format: Oral

The Early and Middle Copper Age of the Carpathian Basin (4500-3700 cal BCE) is the heyday of copper metallurgy. During the first half of the period, a wide variety of copper artefacts with high raw material requirements were unearthed as grave goods or as part of a hoard. They are primarily concentrated in areas of the Great Hungarian Plain and the Transdanubia, far from potential sources of raw materials. In present-day Hungary, the first definite finds of

local metallurgy, smelting crucibles and slag remains are known from the Middle Copper Age Hunyadihalom, and Furchenstich contexts. The question arises: how did the communities living here gain access to this technological knowledge? Where did the raw material they processed come from? Are there antecedents of this technology in the previous era? How can we reconstruct the flow of information and the process of knowledge transfer? We will try to find answers to these questions by combining lead isotope and chemical compositional analyses with radiocarbon dating based on new archaeological finds.

The project is financed from the NRD Fund (NKFI-FK-124260 'The spread of the products and technology of metallurgy in the Carpathian Basin between 5000 and 3000 BC' PI: Zsuzsanna Siklósi).

4 METALLURGICAL PRACTICES IN THE AEGEAN DURING THE EARLY BRONZE AGE: THE CASE OF THE UNDERWATER HOARD OF RHODOPE PREFECTURE

Abstract author(s): Nikolopoulou, Athina (National and Kapodistrian University of Athens; NCSR „Demokritos“) - Filippaki, Eleni (NCSR)

Abstract format: Oral

A significant number of archaeological finds were discovered in 2008 by the Ephorate of Underwater Antiquities in the sea area of Rhodope Prefecture in northern Greece. A total of 116 metallic tools, 23 ingots, and two ceramic bases dating to the Early Bronze Age are contained within this assemblage, which is considered to be an important discovery for the Aegean region.

An archaeological study of the finds was conducted by the Ephorate of Underwater Antiquities. In the meantime, the Palaeoenvironment and Ancient Metal Studies Laboratory of NCSR “Demokritos” has initiated an archaeometric investigation of the hoard. Preliminary analyses were conducted on 64 objects using the non-destructive XRF method in order to determine their constituent elements. Based on the analyses, copper was used along with arsenic in various amounts, as well as zinc, antimony, and lead in minor quantities. As a second step, 41 samples were collected from 32 finds (19 tools and 12 ingots). The samples were examined under an Optical Microscope, and their chemical compositions were determined using a Scanning Electron Microscope (SEM-EDS). As a next step, the samples were etched with a ferric chloride solution, recommended for ancient copper alloys, to examine the microstructure of the tools and understand how they were manufactured. Additionally, a microhardness test was also conducted on the samples in order to determine their durability and functionality.

The purpose of this presentation is to provide a brief overview of the preliminary results of the archaeometric analyses and observations made on the samples collected. This study will draw conclusions regarding the production processes and raw materials used in northern Greece during the Early Bronze Age.

5 METAL RECIPES TRADITIONS AMONG COASTAL COMMUNITIES OF NORTHWEST IBERIA: ALLOY TRENDS DURING LATE BRONZE AGE AND EARLY IRON AGE

Abstract author(s): Gómez Faro, María - Sureda, Pau - Armada, Xosé-Lois (Incipit-CSIC)

Abstract format: Oral

Palstave hoarding is a widespread social practice among indigenous communities of north-western Iberian Peninsula during the Late Bronze Age. In this presentation we have studied the most significant palstave assemblages found in the coastal region of northwest Iberia.

X-Ray Fluorescence analyses have revealed interesting trends in the alloy selection used in the manufacturing of these artefacts. On the one hand, copper-tin alloys are usually chosen for the manufacture of the archaic type, single-looped palstaves, like the ones present in the Mougás hoard. On the other hand, there are two types of double-looped palstaves where the most regular chosen recipes are made with copper, tin and high amounts of lead. In contrast to what was expected, while Samieira and Noalla hoards follows this pattern, Estea hoard have revealed a variety of different alloys. The heterogeneous alloys compositions present in Estea Palstaves set are: copper-tin, copper-lead, copper-tin-lead alloys and a copper palstave.

Northwest peninsula, where some researchers place the Cassitérides classical sources, is one of the regions linked to the Tin Route used during Phoenician period. Could be this change in the metalwork local recipes pattern related with the arrival of new Mediterranean contacts to northwest Iberia?

6 USE OF ARCHAEOMETRY IN TRACING PYROTECHNOLOGICAL ADVANCEMENT OF HARAPPANS IN GHAGGAR REGION, INDIA

Abstract author(s): Singh, Garima (Deccan College PGRI - Deemed to be University) - Manjul, Sanjay (Archaeological Survey of India) - Parmar, Narendra (Central University of Harayana)

Abstract format: Oral

The development of pyrotechnology in protohistoric (Chalcolithic) India has led to a paradigm shift in scientific analysis. A century of Harappan research in the Indian subcontinent culminated in the discovery of two small Harappan settlements in Northern India: Binjor 4 MSR and Tigrana. Archaeometric analysis has greatly aided in tracing the origins of the raw materials used in the site's craft production. Numerous crucibles and slag have been discovered on the site of Binjor, along with kilns and furnaces, indicating the mass production of terracotta and metal objects.

The paper discusses the findings of a chemical analysis of vitrified crucible and copper slag reported from the Harappan site of Binjor 4 MSR and Tigrana. Utilizing Scanning Electron Microscopy Energy Dispersive Spectroscopy (SEM-EDS) and Raman Spectroscopy for compositional analysis and structure measurement of slag collected from the furnaces and Kilns, two distinct types of slag were considered belonging to Bronze Age (Chalcolithic). It deals with non-ferrous metallurgy depending upon the smelting slags and crucible slag collected from these two Harappan sites in northern India.

This analysis's collected data has been considered for cross-cultural analysis of contemporary sites in the region. The paper will discuss the analysis in greater detail in order to trace the hinterland and international trade links among these small rural Harappan settlements.

7 IDENTIFYING SILVER-COATED SURFACES ON EARLY BRONZE AGE AXES FROM BOHEMIA

Abstract author(s): Schimerová, Eva (University of Hradec Králové) - Havlíková, Markéta (Masaryk university Brno) - Msallamová, Šárka (University of Chemistry and Technology Prague) - Bláhová, Zuzana (University of Hradec Králové)

Abstract format: Oral

Our multi-method analysis was focused on two Early Bronze Age hoards of axes from Eastern Bohemia, Czech Republic. Both hoards were analyzed by electron and reflected-light microscopy to determine their elemental composition, surface topography and metalwork wear analysis. All measurements were taken from the surface, as only non-destructive research was allowed. We took advantage of minor defects caused by post-depositional processes to measure the elemental composition. The results showed different types of copper alloy. Metalwork wear analysis showed that the majority of axes were actively used for various purposes. The most interesting finding was residues of silver and in one case gold on the surface of the axes. These were interpreted as secondary coating, which was unfortunately preserved in a very fragmental state. Although some silver artefacts from the same period have been uncovered in Bavaria, none are known so far from Bohemia. Obtained results provide information about the composition, use and manufacture of the axes without the necessity of disturbing the core, in cases it is not an option. The research was possible thanks to the artefacts not being conserved. One of the results of our research is pressure to re-evaluate the necessity and scale of conservation of artefacts from copper and copper alloys.

8 EARLY AND MIDDLE BRONZE AGE GOLDEN SPIRAL RINGS FROM POLISH LANDS

Abstract author(s): Rataj, Karolina (University of Warsaw - Faculty of Archaeology)

Abstract format: Oral

Spiral rings made from gold are category of materials found in inventories, in various cultures, throughout practically all of Europe, since the Neolithic period. Being the so-called prestigious items, they served as determinants of high social status of the people who owned them. They were used as ear, finger or lock rings – as hair fastener, or headband applications.

On the Polish lands in the Early and Middle Bronze Age they appeared relatively rarely. Currently, no more than several dozen golden rings have been discovered at funerary sites, in hoards or as loose finds, located in various regions of the Polish lands, belonging to different cultures, with varying degree of metallurgy development. They represent various types and forms, were formed both from golden wire and tape and have differently shaped ends. Despite this rarity of occurrence, not all of these artefacts have been analysed in great detail.

The research focuses on the issue of Early and Middle Bronze Age golden spiral rings from Polish lands, their production, use and manner of wearing. During them, non-invasive analysis have been conducted on selected artefacts, including XRF and SEM-EDS and analysis under traceological microscope. The use of such methods makes it possible to find answers to crucial questions such as: What is the elemental composition of artefacts? – qualitative and quantitative analysis of elements contained in the tested metals; What was the technique of production of the mentioned rings and was it the same for artefacts from different sites? – observation of technological and production

differences of the tested items; Are there traces of use on the artefacts? – whether in the grave were placed worn spiral rings or not.

482 MEGAPROJECTS AND HISTORIC ENVIRONMENTS: A SUSTAINABLE ROAD MAP TO MEGA LEGACY?

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Plunkett, Emily (High Speed Two - HS2; MCIfA Chartered Institute for Archaeologists - ClfA; Transport Infrastructure Ireland) - Aitchison, Kenneth (Landward Research; Federation of Archaeological Managers and Employers - FAME; University of Liverpool) - O'Flaherty, Enda (Rubicon heritage; Red River Archaeology) - Wink, Karin (Arcadis Netherlands) - Schweitzer, Holger (Jacobs, Suedlink)

Session format: Regular session

Megaprojects are transformational temporary engineering projects, characterized by large investment, vast complexity, and long-lasting impact on the economy, environment, and society.

This session, organised by: Landward Research, TII, Arcadis Netherlands, HS2, Rubicon Heritage, Jacobs, and Red River Archaeology, will examine the interconnectivity between infrastructure projects and finite heritage resource.

Examples of megaprojects include: the TII programme, Suedlink, Canal Seine Nord Europe, Heathrow T5, HS2, Dike reinforcement Afsluitdijk, LUAS Dublin, and ViA15 Highway Netherlands.

However, projects which leave mega-legacy don't have to be mega in size. Smaller agile investigations can also yield mega-impact.

Such projects provide the opportunity to continually improve on:

- Innovation
- Sustainability and green procurement
- Cross disciplinary cooperation
- Practice and management
- Holistic approaches to heritage (landscape, monuments, geography)
- Learning lessons and seeking opportunities for improvement

These opportunities should allow for long-term sustainable transformation of our industry and heritage management by building skills, capacity, and inter-institutional communication while also conserving heritage infrastructure and landscapes.

Many megaprojects will be publicly funded and as such pressure is always present to ensure value and sustainable outcomes for the people who are both funding and benefiting from the project. Long term change can be challenging to affect even through the largest projects and often there is a need to recognise the benefits derived will be realised in the future. These pressures drive innovation and the adaptation of new approaches to manage the challenges and scale of these projects.

Bearing this in mind:

- How do we deliver our works to maximise our impact?
- How can we understand the challenges and opportunities of megaprojects?

This session invites papers which examine the practice and management of delivering sustainable heritage works or which offer case studies about:

- Approaches before or during investigation programmes
- Lessons learnt
- Challenges and how these were overcome
- Threats and opportunities of sustainable heritage

ABSTRACTS

1 A LINE TO LEITH: THE ARCHAEOLOGY OF TRAMS TO NEWHAVEN

Abstract author(s): Lawson, John (City of Edinburgh Council; ALGAO:UK)

Abstract format: Oral

This paper explores the archaeology of the Trams to Newhaven project, managed by the City of Edinburgh Council Archaeology Service and undertaken by GUARD Archaeology between 2019 & 2023. This City of Edinburgh Council project is the culmination of the Edinburgh Trams programme (instigated in 2003) which has seen the construction of a new light rail line linking Edinburgh's airport in the west, through the city centre, to its port of Leith in the north.

The project has proven to be one of the largest and most controversial infrastructure projects ever undertaken in Scotland, which has been constantly and literally in the public eye, given its urban location. However, the programme has uncovered nationally important archaeological remains none more so than during the current project which has provided new evidence for the port's Napoleonic defences, the 19th century cable tram system and most significantly the excavation of a section of South Leith Parish Church's medieval kirkyard undertaken whilst dealing with the challenges presented by the COVID-19 pandemic.

2 ARCHIVING HIGH SPEED 2: LESSONS IN PRESERVING AND DISSEMINATING DATA FROM A MEGAPROJECT

Abstract author(s): Zoldoske, Teagan - Green, Katie (University of York; Archaeology Data Service)

Abstract format: Oral

Over the past three years the Archaeology Data Service (ADS) has been undertaking the long-term preservation and dissemination of the digital data from the archaeological investigations undertaken as part of the UK's High Speed 2 (HS2) railway infrastructure development project. It is estimated that the HS2 project will deposit 15 TB of data in total; this is by far the largest single project dataset ever deposited with the ADS. The vast scale of the dataset and the complex nature in which the data was collected by multiple different archaeological sub-contractors brings with it both challenges and great opportunities.

This paper will look at the challenges that ADS has faced preserving, disseminating and aggregating such a large and disparate dataset. Highlighting the lessons ADS has learnt as a result of the challenges faced, and reporting on how these lessons are being integrated into the next stages of the HS2 project. This paper will finish by looking forward to how the legacy of HS2 and the lessons learnt will reach beyond the HS2 project to benefit future projects of any scale.

3 SUEDLINK-HESSE: ARCHAEOLOGICAL WORK WITHIN A MEGAPROJECT OF GERMANY'S "ENERGIEWENDE"

Abstract author(s): Schneider, Jan - Misterek, Daniel (SPAU GmbH)

Abstract format: Oral

SuedLink, as a key infrastructure project of the German "Energiewende", involves the construction of the longest underground power cable of the world with a length of more than 700 km across five federal states from northern to southern Germany, crossing five federal states. This technically demanding project is also to be considered a mega-project from an archaeological point of view. SPAU GmbH has been commissioned by TransnetBW GmbH since 2020 to carry out preparatory archaeological work in the approximately 60 km long section through the federal state of Hesse.

In the course of this work, the evaluation of remote sensing and archive data, the planning and execution of non-invasive surveys, the archaeological monitoring of the subsoil investigations and the planning of invasive surveys have been carried out in several stages so far. The work was always carried out with the involvement of the client, the heritage management and the engineers in order to profitably incorporate the results into the technical design of the cable trenches.

The presentation by the two project managers Jan Schneider and Daniel Misterek will provide an overview of the work carried out, the methods used and the cooperation between the various parties involved. It will also address the opportunities and challenges of commercial archaeology in the working environment of such a mega-project.

4 WORKING AT THE SHARP END - DELIVERING ARCHAEOLOGY FOR THE HS2 (CENTRAL) ENABLING WORKS

Abstract author(s): Collard, Mark (Red River Archaeology; Infar JV)

Abstract format: Oral

Infra JV (Rubicon Heritage (Red River Archaeology) and Network Archaeology) worked as an archaeological contractor on the HS2 Enabling Works Contract Archaeological Framework for Phase 1 Central, the largest single archaeological delivery project in the UK to date.

Working for Fusion JV on behalf of HS2 Ltd from 2018 to 2022 Infra JV successfully delivered 20 individual mitigation works packages across 35 separate sites, to a value of £20 million delivering more than 1100 evaluation trial trenches, 24 ha of mitigation excavation, 2500 test pits, and more than 75 post-excavation reports. All works were delivered to HS2 Technical Standards including the Historic Environment Research Design Strategy (HERDS), working closely with the clients' archaeological and engineering teams. We developed a strong systematised, experienced management and organisational structure to specifically deliver HS2 related works to the required high quality.

The project required new ways of working, to different scales of operation for the archaeological contractors involved, with new responsibilities and requirements. Flexibility, mobility and innovation for organisational cultures and structure proved essential. Uninterrupted delivery of most of the main works through the Covid 19 pandemic brought additional challenges to traditional ways of working.

The project could only be delivered through collaboration, breaking down traditional barriers between actors and stakeholders in the archaeological process, and working across the client/contractor/sub-contractor commercial relationships to ensure that the key aim was met - the best quality archaeological work, delivered to time and budget. Trust and respect across the whole team were vital to that and a 'Right first time' culture was fundamental.

We will examine what had to change to make this happen, staff development and growth, the lessons learnt (good and the less good), how the whole was greater than the sum of its parts and show the exceptional quality of the archaeological results obtained.

5 TII ARCHAEOLOGY AND HERITAGE: REFLECTING ON TWENTY YEARS OF IMPACT AND LESSONS FOR FUTURE ARCHAEOLOGICAL PROJECTS

Abstract author(s): Swan, Ronan (TII)

Abstract format: Oral

In the context of Transport Infrastructure Ireland's (TII) experience on national road and public transport projects, TII has developed a nuanced and purposeful approach to the management of archaeology and heritage, which recognises the legislative and regulatory context, the need to manage risk, and the fundamental importance of building public trust.

This presentation will briefly outline TII's approach to archaeology and heritage, with a particular focus on ensuring that heritage works are delivered to a high standard throughout the lifespan of a project and that the results are accessible to different audiences ranging from the local community to international researchers.

It will then concentrate on some of the impacts from TII's programme of works in terms of:

- providing a sustainable model and template for the management of archaeology and heritage, through the development of standards, guidelines, and contracts,
- improving our understanding and knowledge of particular periods and particular site types,
- creating structured approaches to the dissemination of these results, and,
- enabling significant research, either through TII's own research initiatives, collaborative projects, or making data available to major research projects.

Collectively, these impacts provide a model for realising a Mega Legacy.

6 CULTURAL HERITAGE MANAGEMENT AND BIG INFRASTRUCTURE PROJECTS - EXPERIENCES FROM SOUTHWEST NORWAY

Abstract author(s): Sundet, Nils Ole (Agder county council) - Meling, Trond (Museum of Archaeology, University of Stavanger) - Aasbøe, Malin Kristin (Rogaland County Council) - Stokke, Jo-Simon (The Museum of Cultural History, University of Oslo) - Vivås, Arild (Stavanger Maritime Museum) - Nymoen, Pål (The Norwegian Maritime Museum)

Abstract format: Oral

To improve the road standard and to reduce traveling time between Stavanger and Kristiansand in the southwestern part of Norway, the construction of a new highway is under planning. The development of part of the road have been selected as a project arena to test how archaeological investigations and the protection of cultural heritage interests could be done more efficient, more predictable, and in an early stage of the planning process. A close collaboration within the culture heritage administrations, which includes four museums, two county councils and the Directorate for Cultural Heritage, and between these administrations and the public road developer, have been essential to fulfill the objectives of the project. The project began in 2019 and so far, there have been four seasons of fieldwork, mainly surveys.

The project area is ca. 125 km long and nearly 400 m wide. It is located to the interior of the counties of Rogaland and Agder, within a landscape characterized by forests, valleys, and heaths. Previously, only a handful archaeological investigations had been carried out in this area, and few archaeological sites were recorded. Hence, our knowledge of the prehistoric settlement was scarce before the project started.

In this paper, we will present the expectations and the strategies of the project, how we have collaborated to achieve the goals of the project, and our experiences of doing cultural heritage management within the project.

7 TII CULTURAL HERITAGE IMPACT ASSESSMENT GUIDELINES AND STANDARDS

Abstract author(s): Coldrick, Bryn (Archaeological Management Solutions; Transport Infrastructure Ireland)

Abstract format: Oral

Transport Infrastructure Ireland (TII) is in the process of implementing new Cultural Heritage Impact Assessment (CHIA) guidance and standards to replace the 2005 National Roads Authority (NRA) guidelines for the assessment of archaeological heritage and architectural heritage impacts of National Road Schemes. Archaeological Management Solutions (AMS) has been working with TII on this important initiative, which has involved extensive consultation both internally within TII and with a wide range of external stakeholders.

The new, more detailed guidance and standards for the assessment of the impacts on Cultural Heritage address archaeological heritage, built heritage and intangible heritage. They set out the expected requirements for undertaking CHIA and the production and delivery of Cultural Heritage outputs for inclusion with Constraints Reports, Option Selection Reports, Environmental Impact Assessment Reports and/or Environmental Reports for TII Projects.

In this presentation, AMS will provide an overview of the new guidance and standards and their key requirements. This presentation is an important opportunity for Cultural Heritage Professionals to find out how TII has undertaken this major review of their Cultural Heritage guidelines, and become familiar with their new requirements.

8 A HOLISTIC APPROACH TO CULTURAL HERITAGE ON THE LOWER THAMES CROSSING

Abstract author(s): Bishop, Lara - Lucey, Donal (Arcadis) - Dickinson, Ed (Jacobs)

Abstract format: Oral

The Lower Thames Crossing (LTC) is a National Highways project to improve the strategic road network with a new crossing of the River Thames east of London. In 2022 the project submitted its Development Consent Order application to the Planning Inspectorate.

The LTC has adopted a holistic approach in many aspects of the project. We'll discuss this in relation to three examples:

- Dedicated environmental coordinators have oversight of several related environmental topics, this aided in avoiding 'siloed' working particularly between the cultural heritage, biodiversity and landscape and visual teams. This enabled us to ensure that any potential conflicts in mitigation between topics were picked up as early as possible and lent weight to our design review, which aided in producing collaborative working with the engineering and design teams on the project.
- To inform the environmental impact assessment for cultural heritage an extensive programme of archaeological evaluation was undertaken in 2019 – 2021. The results of this enabled an understanding of the archaeological baseline on a landscape scale. This enhanced understanding fed back into the iterative design process.
- The lasting benefit and social value of the project – working with heritage stakeholders outside their planning role, charities and voluntary groups to identify where the project can add value to other heritage initiatives and contribute to social value. This has led to financial support for over 20 heritage projects.

9 BUILD IT AND THEY WILL COME? SKILLS, CAPACITY AND LONG TERM SUSTAINABLE TRANSFORMATION

Abstract author(s): Geary, Kate (Chartered Institute for Archaeologists)

Abstract format: Oral

It is 2015. The UK archaeology sector is starting to show signs of recovery following the crash of 2008, although it has lost a lot of its workforce. The Westminster government is 'spending its way out of recession' by investing in a programme of infrastructure development. We are worried that there won't be enough archaeologists to undertake the programmes of work that will be required. But we have also identified a unique opportunity to work together as a sector to tackle strategically long-term problems in skills and employment.

So what did we do about it? Eight years later, and with many of those programmes of work still ongoing, have we effected a strategic transformation in the arena of skills and capacity? Did we miss the opportunity or is it still a work in progress? This paper will reflect on the progress we've made and take a critical look at the challenges involved in delivering change. It will consider the barriers the sector has faced and what needs to happen to ensure that mega projects deliver mega impact and legacy.

10

MEGA EIA AND HS2: THE APPLICATION OF HOLISTIC APPROACHES FOR A SKILLS LEGACY

Abstract author(s): Plunkett, Emily (HS2)

Abstract format: Oral

As heritage professionals we all know that a holistic approach to the assessment of the historic environment using its three pillars (archaeology, built heritage, and historic landscapes) is critical to project success and robust assessment.

But do we apply this thinking to our teams or ourselves?

During the drafting of the Phase 2b (Crewe to Manchester) Environmental Statement we integrated a high functioning team dynamic into assessment via the progressive assurance approach (developed by ARUP as part of the HS2 project). This was part of the larger 'one team' collaboration.

For the historic environment team this saw the adoption of a holistic approach team focused approach to assessment which integrated:

- Data analysis using a database;
- Consultation and collaboration with stakeholders;
- Integrating risk/archaeological potential considerations into our assessment; and
- Assuring assessments for all three pillars of the historic environment through inter-organisational collaboration.

The outcomes of this approach were:

- Rapid skills development;
- Rapid team formation;
- Increased knowledge sharing; and
- Tangible skills gain.

This paper will discuss and examine the Progressive Assurance approach which led to the rapid development of a high functioning team with direct effect on the quality of the historic environment assessment.

11

ARE WE REALISING THE GEOSPATIAL VALUE OF DATA FROM PRIMARY FIELDWORK?

Abstract author(s): McKeague, Peter (Historic Environment Scotland)

Abstract format: Oral

Project archives are a fundamental legacy of archaeological fieldwork from individual research to large scale multi-disciplinary infrastructure projects. Data is expensive to collect, unique in character, and for destructive processes, an irreplaceable record of those investigations. Issues of archive deposition and long term preservation aside, how reusable are digital data created by multiple practitioners, working across the spectrum of archaeological fieldwork?

By their nature archives classify and compartmentalise depositions ensuring easy retrieval with researchers working across discrete collections but archival practices hinder effective reuse within the wider geospatial environment. In Britain online reporting through OASIS has introduced some curatorial data standards to project archaeology. Users of the system are also encouraged to share the spatial extents of projects to update inventory systems. However, more sophisticated use of born digital data maybe compromised by non-deposition of data, preservation in the wrong format and the lack of agreed, published data standards and vocabularies.

The need for standardised approaches is pressing. The United Kingdom government established The Geospatial Commission in 2018 to accelerate the delivery of economic, social and environmental benefits derived from geospatial data, products and services across the private and public sector. A key infrastructure project is the National Underground Asset Register designed to collate and share underground infrastructure data from utilities. Buried archaeology is an important but neglected aspect of that environment.

With the volume and sophistication of fieldwork undertaken each year existing curatorial and archival approaches to data are ill-prepared to contribute meaningfully to the wider geospatial environment. This presentation calls for the development of consistent and transparent data standards across the spectrum of fieldwork techniques – and collaboration on megaprojects is an important step in that process – in conjunction with data curators to realise that potential in the context of a rapidly evolving geospatial infrastructure.

12

DEVELOPMENT AND REJUVENATION: FACILITATING THE HISTORIC ENVIRONMENT AND REJUVENATING HISTORIC INFRASTRUCTURE AT SCALE FOR A LIVING LANDSCAPE

Abstract author(s): O'Flaherty, Enda (Rubicon Heritage)

Abstract format: Oral

The all island Strategic Rail Review commissioned by the Department of Transport (Republic of Ireland) and The Department of Infrastructure (Northern Ireland) will set forth proposals for the rejuvenation and reinstatement of railways across the island of Ireland over the coming decades. This ambitious all- island endeavour will present new and unique challenges in the area of Cultural Heritage Management.

Accommodating largescale sustainable infrastructure projects presents both threats to, and mitigation opportunities in the area of Cultural Heritage Management, as much of the required infrastructure must be intertwined with existing infrastructure that is of historical, architectural, and cultural heritage significance. This circumstance is exceptional and presents challenges to how we can manage the non-renewable cultural resources of our urban and rural environments, integrate rail with the living city and countryside, and still facilitate the journey to sustainable living.

Policies and practices in relation to the protection of the cultural heritage must be implemented while accommodating policies and practices that strive toward a sustainable future. This circumstance represents potential conflict between directives which facilitate the preservation of cultural heritage, and those directives which strive toward a greener future.

What have we learned to date about this delicate interface? What threats and opportunities does railway construction and rejuvenation pose to the historic environment, both urban and rural? What happens when environmental protection policy and cultural protection policy clash?

The answers to these questions may be probed and sometimes answered through previous experience e.g. the re-instatement and rehabilitation of past mega-projects such as canal infrastructure (Waterways Ireland), the rejuvenation of former railway lines as greenways (Mallow-Dungarvan), the excavation and rejuvenation of former docklands (Broadstone harbour), and the integration of new railway with historic streetscapes (Luas Dublin). From this starting point, what have we learned that can improve our work in the future?

13 **COMMUNICATING ARCHAEOLOGY IN SUEDLINK - CONVEYING THE NECESSITIES AND HIGHLIGHTING THE BENEFITS OF MANAGING CULTURAL HERITAGE**

Abstract author(s): Schweitzer, Holger (Jacobs/ SuedLink)

Abstract format: Oral

Renewable energy: as much as possible as fast as possible, is the currently political demand of the day in Europe. Accordingly, Germany's targets for the transition from fossil to renewable energies, too, are ambitious and increasingly accelerated as a result of the current geopolitical and economic situation. With a length of more than 700 km Suedlink is currently the largest project of the German national energy transformation plan with electricity envisaged to flow through the underground cables by 2028.

Accelerating planning and consent procedures also means exploring new avenues for managing and protecting cultural heritage in compliance with multiple federal laws. To meet this challenge, the SuedLink Archaeology team are forging new ways to ensure compliance and improve methods so that overall project targets are met (or even improved on).

A key role in this regard is continuous, transparent and target group-orientated communication. Designing out impacts, agreeing archaeological mitigation measures, or negotiating their integration into the construction process requires a well-established and clear dialogue with engineers, senior project management, construction agents and a whole host of other key stakeholders. Establishing a mutual understanding of practical, technical, or legal requirements is vital for the creation of an environment of constructive cooperation for the project's delivery.

Furthermore, a holistic public outreach strategy is key to a successful mega-project delivery. This involves e.g. informing landowners on planned archaeological fieldwork well in advance of the fieldwork, or disseminating information to the public on archaeological findings. Fundamentally underlying to all project communication is a recognition of all cultural heritage, including archaeology, as a shared social valued and valuable public resource, and understanding that good practice not only meets the demands of good conservation management. It can simultaneously contribute to an accelerated project delivery with critical socio-political goals.

14 **REDISCOVERING THE IDENTITY OF A LANDSCAPE - EXPERIENCES FROM LARGE SCALE EXCAVATIONS IN NORTH ZEALAND, DENMARK**

Abstract author(s): Aarsleff, Esben (Museum Nordsjælland)

Abstract format: Oral

In recent years The Museum of North Zealand has carried out large scale excavations prior the construction of a new superregional hospital and derived infrastructural, housing and industrial projects in a mosaic landscape dotted with smaller wetlands around the former inlet called Salpetermosen.

The excavations were initiated in 2012 and are still ongoing as the area is being developed over a long period of time. The combined area (hospital and other projects) of investigation so far covers 3 km², which by Danish standards, is a relatively large area. The finds comprise of sacrificial and profane use of wetlands, as well as settlements and villages from larger parts of the period between 4000 BC and 1560 AD.

Most of the constructors show a fundamental understanding of the time needed to make the excavations. Generally, they also want to benefit from the results in their branding, which is a tendency that began somewhat twenty years

ago in North Zealand. The same goes for the local community, who take great interest in the many results, and they all consider the archaeology as a part of their shared past.

The archaeological results provide an identity for the landscape, which we need to communicate to the public, the developers and the municipality, if we want the identity to be part of the new townscape. Our effort is usually focused on the wellknown ways of branding archaeological results: Exhibitions, tours of the sites, open excavations, lectures, newspaper articles and so on. But we still haven't found the right way of integrating the past identity in the present townscape. Perhaps we need to focus our energy on other solutions?

15 RE-EXCAVATING THE ARCHAEOLOGY OF LONDON 2012

Abstract author(s): Gardner, Jonathan (Edinburgh College of Art, University of Edinburgh)

Abstract format: Oral

This paper reviews the varied roles that archaeology played in the London 2012 Olympic and Paralympic Games.

Even before London's successful bid in 2005, the Games' main site in Stratford was branded a 'wasteland' and a 'scar' across the city; this despite being home to hundreds of people, providing employment for ca. 5000 workers in 284 businesses, and hosting allotments and leisure facilities (Davies et al. 2017, p. 1). Following the site's compulsory purchase for construction in 2007, archaeologists (including myself) moved in to document parts of the 200ha area before its complete clearance. While this archaeological investigation was comprehensive for some areas and time periods, in this paper, I suggest that opportunities were missed for far greater engagement with the recent past and the contemporary inhabitants and users of the site. This program of development-led archaeology – carefully controlled by major environmental consultancies – arguably failed to challenge the simplistic wasteland narrative in favour of providing positive news stories for the mega project's organisers.

Presenting the result of a major investigation of the relationships between mega events and heritage (Gardner 2022), I suggest that re-excavating such projects' engagement with archaeology is essential if we are to create richer and more heterogeneous understandings of the past, and to ensure the complexities of more recent history are not ignored in favour of older, 'safer', depoliticised stories.

- Davies, M., Davis, J., and Rapp, D., 2017. *Dispersal: picturing urban change in east London*. Swindon, UK: Historic England Publishing.
- Gardner, J., 2022. *A Contemporary Archaeology of London's Mega Events: From the Great Exhibition to London 2012*. London: UCL Press. <https://doi.org/10.14324/111.9781787358447>

16 HERITAGE MANAGEMENT AND THE RENOVATION OF THE AFSLUITDIJK, THE NETHERLANDS

Abstract author(s): Timmermans, Luc - Mol, Koos (Arcadis)

Abstract format: Oral

In this paper we want to share how the contractor was motivated to integrate heritage in designing and renovating the Afsluitdijk. We want to address the factors we consider to be pivotal in this process, from the exploration phase until project execution.

In the 1930's, the existing discharge sluices on both sides of the Afsluitdijk were fortified with separate concrete bunkers and shelters. Both fortified positions were constructed around the sluices and made use of the existing dams, which was both strategic militarily and cost efficient. After a five-day battle in the Second World War, the positions remained their military importance in the beginning of the Cold War. The result is a relatively young but rich and layered cultural landscape with both archaeology and listed monuments.

The renovation of the Afsluitdijk in the Netherlands started in 2019 and encompassed not only the elevation of the existing dam, but also constructing a new set of sluices and pumps, next to the existing ones. The project for the renovation of the dam was issued by the Directorate-General for Public Works and Water Management of the Netherlands (Rijkswaterstaat) and has been tendered as a DBFM (Design, Build, Finance and Maintain) project. The challenge was to both preserve this site of national heritage and renovate the water works to make it future proof.

Prior to the tendering of the works, the government specified the room for adaptations and changes of the dam in legislation and in the tender conditions. It defined both restrictions and possibilities, for physical interventions. In that way the future contractor would have the freedom to come up with its own design solutions, but within a predefined framework. The contractor took this as an imperative to integrally incorporate heritage into the design process.

SAVE IT BEFORE YOU LOSE IT

Abstract author(s): Toja, Sara - Silva, Elisângela (Arcadis - MG)

Abstract format: Oral

Brazil is known worldwide for its mining deposits mainly for the capture of iron, gold and its derivatives. For the execution of this type of work, mining dams are built, as a barrier, where the tailings are deposited, such construction constitutes the category of megaprojects of large companies that are established in Brazilian territory.

Our work since the beginning of these megaprojects is of major importance because we participate in the entire life cycle of the enterprise, with its challenges and opportunities, enabling the anticipation of problems. Projects of this dimension allow the use of digital solutions that facilitate the safeguarding of important data about cultural heritage, like “Fulcrum” and “Memory Places” developed by the digital team of Arcadis Brazil.

In 2020, five years after the dam burst in the city of Mariana, the law which establishes the National Dam Safety Policy (PNSB), was updated, in which cultural heritage is brought as part of the PAE (Emergency Action Plan) which must contain measures to rescue and safeguard cultural heritage.

In the specific case of the state of Minas Gerais, the legislation of the State Institute of Historical and Artistic Heritage (IEPHA) defines the procedures and studies that must be conducted to safeguard cultural heritage under the PAE, activated when a mining dam alerts to a level drive. Among the stages, there is the diagnosis of the material cultural heritage that should include, this document should also contain the identification of archaeological structures and other elements of preservation interest.

It is of major importance to carry out the diagnosis and cadastral survey of both material and immaterial assets to record the cultural heritage that is on the imminence being lost.

REVISITING ARCHAEOLOGY AND THE EUROPEAN FAR-RIGHT

Session theme: 6. Contested Pasts & Presents

Session organisers: Niklasson, Elisabeth (University of Aberdeen) - Hølleland, Herdis (Independent)

Session format: Session with presentations of 6 slides in 6 minutes

In the EAA session ‘Archaeology and the European Far-right’, held in Maastricht in 2017, we asked participants to tell us about the rise of far-right political movements in the countries where they live and work. We wanted to know about far-right heritage policies as well as attitudes and responses among archaeologists and heritage officials. Could we soon be facing a situation where civil servants had to choose between political compliance and ideals of inclusive and decolonized practices?

In this session we seek to revisit and extend this discussion. There are two important reasons for this. The first is to evaluate continuity and change. Six years down the line, the far-right momentum seems to have fizzled in some places, like with the criminalization of Golden Dawn in Greece and the declining influence of UKIP in the UK. Elsewhere, like in France, Italy, and Sweden, it has persisted, accompanied by political proposals to establish national canons, to celebrate fascist symbols, and to increase protection and funding for archaeology and historical monuments. How, if at all, have archaeologists and heritage officials adapted to this? Six years later, we also find a new research trend in archaeology and heritage studies that examines the uses of the past in contemporary far-right politics and the reception of their narratives in the public space. What can we learn from this new research direction as a whole? And what is the next step, after educating the field and sector about these explicit archaeopolitical connections?

We invite contributions that, in 6 slides and 6 minutes, update, reflect, exemplify, theorize, and explain current intersections between archaeology/heritage and reactionary, radical, and populist right-wing movements in Europe and beyond.

ABSTRACTS

FAR-RIGHT IDENTITY POLITICS IN POPULAR PERFORMANCES OF THE PAGAN PAST

Abstract author(s): Reichenbach, Karin (Leibniz-Institute for the History and Culture of Eastern Europe)

Abstract format: Oral

Popular interest in pre-Christian societies like early medieval Vikings and Slavs has grown in central and eastern Europe like never before and is often linked to a strong ethnic resp. national identification. Staged in performances of historical reenactment, Neopagan rituals and thriving Pagan metal and folk music genres, imaginations of the Pagan past seem to fascinate a growing public audience. At a closer look, however, the intersections of these fields of performative history engagement reveal a closeness to far-right ethno-nationalist or even racist ideological programs and networks.

Based on case studies from Poland, I will trace the trajectory of the Pagan revival from open and radical political activism after 1990 to a change towards more subtle but publicly effective cultural work since the late 2000s. I will ask for their role, influence and success in the popularization of history which seems based on epistemic approaches towards knowing, experiencing and conveying the past that differ in certain respects from established scholarship. Addressing the challenges, but also the responsibility this poses for Public Archaeology and History Education, the more general question is raised whether and how radical political appropriations of history should be recognised, absorbed, and confronted.

2 “CREATING A NEW ITALIAN IMAGINARY”: HISTORICAL AND ARCHAEOLOGICAL ELEMENTS IN NATIONALIST AND IDENTITARIAN PROPAGANDA IN ITALY

Abstract author(s): Visonà, Mara (University of Salento)

Abstract format: Oral

The use of historical and archaeological elements within nationalist and identitarian propaganda in Italy is not new. During the twenty years between Mussolini's rise to government and the beginning of WW2, the Fascist government worked to create the basis of an Italian 'mythology' based on the image of a mythical and stereotyped ancient Rome (Torelli, 2010). This resulted in the extensive use of Roman symbology within the political debate, and in massive funding of archaeological excavations in Rome.

With the recent strengthening of nationalist and identitarian propaganda throughout Europe (Dalton & Berning, 2022), Italian nationalist and identitarian movements, especially on the right-wing, are using history and archaeology themes within political propaganda (eg: Fratelli d'Italia, Lega Nord and CasaPound). The means and purposes of propaganda have changed today, but the objective remains the same: to seek legitimacy in the past for the policies of the present (Niklasson, 2023).

At present, this interest has not directly affected the policies within the research institutes. Still, the effort to create a popular imagery linked to the values of the historicity of Italian identity and its culture is clear. Through web radio programmes, blogs, films and historical re-enactments, Italian right-wing parties and movements approach history, sometimes extolling the heroism of the Italian against foreign invaders, sometimes the roots of Christian culture and the familialist model of society.

The aim of this proposal is to present the historical-archaeological contents and themes employed in right-wing propaganda, as well as the means used to create “a new Italian imaginary” (Fratelli d'Italia, political programme 2022).

3 ON THE MAINSTREAMING OF 'HERITAGE POPULISM' IN SWEDEN

Abstract author(s): Niklasson, Elisabeth (University of Aberdeen)

Abstract format: Oral

It is often said that the extreme is going mainstream and that long established political parties have taken advantage of populist far-right tactics to appeal to their voters, opting for a 'politics of whatever works'. This contribution examines if this is the case when it comes to the far right's uses of heritage in Sweden. Rather than focusing on the far right, however, it examines if elements of their 'political imaginary' appear on the platforms and in the rhetoric of other parties. Here, political imaginary means symbols and keywords that are organised into a system of meaning, functioning as shorthand's for ideological messaging and to legitimise collective social existence. When Christian democrats want to reinstate traditional family values, or when left-wing politicians try to naturalize ideas of a classless society, do they draw inspiration from or mirror far-right rhetoric? Do the traditional right use heritage to reaffirm or recode ideas of the national past? What historical symbols, periods, or sites do they activate? Based on a survey of other parties, I argue that there is a slight mainstreaming of the far-right political imaginary, but that the 'heritage populism' of many established parties predate the rise of the far right in Sweden.

4 THE SCYTHIAN „EMPIRE“ AND MODERN IMPERIALISM

Abstract author(s): Shelekhan, Oleksandr (Institute of Archaeology, National Academy of Sciences of Ukraine)

Abstract format: Oral

This contribution examines the appropriation of Scythian culture in modern Russian imperialism. Rather than focusing on marginalized groups, it deals with state propaganda. After decades of research in the Black Sea region, scholars agreed that certain archaeological groups could be associated with certain tribes. The Scythian-, as well as the Sauromatian and Sarmatian cultures were outlined within specific chronological and geographical frames, while distant Asian communities remained nameless (labeled after the eponymous monument).

The situation changed after 2014. Instead of the long and tedious descriptor 'cultures of the Scythian period,' the bright term 'Scythians' became widespread among Russian scholars studying Asian steppe peoples. And instead of the variety of diverse cultures, the illusive 'Scythian empire' entered academic and public discourse. A strong contrib-

uting factor was the exhibition ‘Scythians: Warriors of Ancient Siberia’ (2017-2018), held in the British Museum in collaboration with the State Hermitage. Though many of the displaced artefacts in the exhibit came from the territory of modern-day Ukraine, the curators avoided any mention of their origin, stressing the common Eurasian cultural landscape and the assumed Asian origin of the Scythians. One could argue that the narrative simply represents a different point of view on history, but the real intentions were revealed by the initiators. Hermitage director said: “The first period of the Scythian war has come to an end” with the occupation of Crimea, and today “Our recent exhibitions abroad are just a powerful cultural offensive. If you want, a kind of ,special operation.’ So in searching the imaginary common historical roots of Ukraine and Russia, the Russian imperialistic propaganda digs way deeper than 1945 or even 998. A simple rebranding exercise tied the cultural marker “Scythian“ to the Russian territory, and the stolen heritage from a former imperial outskirt was used as “jewels in the crown”.

5 TOO FAR, OR NOR FAR ENOUGH? CURRENT RESEARCH ON THE USES OF THE PAST IN FAR-RIGHT POLITICS

Abstract author(s): Hølleland, Herdis (Independent) - Niklasson, Elisabeth (University of Aberdeen)

Abstract format: Oral

Research on far-right heritage politics and on the public reception of far-right symbolism and narratives can be found in many fields of study. In archaeology, research has looked at everything from far-right cultural policies to the appropriation of archaeological results and sites. In anthropology, the focus has mainly been on political symbolism and the uses of historical monuments in the formation of social networks and group identity. In classical studies and history, discussions have centred around the role and reception of the particular periods of past and the uses of tropes and narratives of those from different regional contexts. Far-right uses of the past have also been noted in social and political science research, especially when speaking of religious heritage and the (re)formation of nation states. Looking at this widespread interest, it seems like we should have come quite far in understanding the motivations and character of far-right groups’ mobilization of heritage and its various effects. Yet, we argue, that because the research to date has mostly happened inside disciplinary silos and limited frames of inquiry, we have not come far enough.

This contribution examines and synthesises research done in these fields. What are the dominant themes in the literature? Is research from different fields complementary, parallel, or overlapping? What can we learn about the far-right’s political activation of the past if we consider the research across disciplines?

6 ETHICS, EMOTION AND THE FAR-RIGHT: REFLECTIONS ON THE ROLE OF HERITAGE AND ARCHAEOLOGY

Abstract author(s): Farrell-Banks, David (University of Cambridge)

Abstract format: Oral

In recent years, we have seen significant focus given to the interaction between the past and the ideologies and propaganda of the far right. This paper uses a focus on the emotional impacts of our interactions with the past to reflect on the political role of archaeology and heritage practice in the UK today.

The way with which we communicate our understandings of the past have become frequent targets of attack in the UK. Through a mainstreaming of reactionary ideologies, archaeology and heritage can become focal points of political division. Often, those who work within these fields can be caught on the frontline of discussions that are far removed from their motivations for doing the work they do.

Against this foundation, this short paper will reflect on the ethical implications of the politics of archaeology and heritage practice. Drawing on examples of progressive practice in the UK, the paper will argue for the continued necessity of communication of the past that champions diversity and inclusivity, while also recognising that this work must come with a practice of care for those working in the sector.

7 THE ENEMY WITHIN? NATIONALIST TOTALITARIAN THINKING WITHIN ARCHAEOLOGY

Abstract author(s): Karl, Raimund (Universität Wien)

Abstract format: Oral

During the Third Reich, the majority of germanophone archaeologists were active supporters of the Nazi regime. While sometimes presented as a ,devil’s bargain’ - massively increased financial support for archaeology, which was considered an ,ideological discipline’ by the Nazi regime after all, enabled more research and made for great career opportunities - there are sound reasons to believe that most germanophone archaeologists were ,deutschnational’, racist, and autocratic totalitarians well before the Nazis took over and thus found a natural home in the party. Thus, they did not so much have to be enticed than becoming Hitler’s archaeological executioners quite willingly (Goldhagen 1996).

Archaeology, at a first glance, appears to be a rather 'leftist liberal' discipline these days; and there is – quite rightly – considerable concern about archaeology being 'abused' by far-right political movements for their own (nefarious) purposes; especially as popular support for far-right parties has (more or less) steadily been increasing in Europe for decades. Thus, the session abstract asks whether we could “soon be facing a situation where civil servants had to choose between political compliance and ideals of inclusive and decolonized practices?”. Indeed, much like in that quote, the far-right seems to always be presented as an external threat to archaeology in the current discourse; despite our less than glorious disciplinary past even in Austria and Germany.

This paper will take a radically different perspective. It will examine to what extent nationalist totalitarian thinking still exists in archaeology; whether it is still prevalent; and whether it might even be inherent to some of our most fundamental disciplinary assumptions and principles. Our biggest enemy and the greatest threat to inclusive and decolonised ideals may well be the one within.

Bibliography

- Goldhagen, D. 1996, *Hitler's Willing Executioners: Ordinary Germans and the Holocaust*, New York: Alfred A. Knopf.

484 GLOCALIZATION OF IDENTITIES IN THE ROMAN WORLD

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Mech, Anna (University of Warsaw) - Perinić, Ljubica (Croatian Academy of Sciences and Arts)

Session format: Discussion session

According to sociologist Roland Robertson, the term 'glocalization' was coined by Japanese economists to explain Japanese global marketing strategies. The term introduced by Robertson was widely accepted and used in sociology, and in recent years is finding its use in archaeology. If we accepted that what is 'local' is organically shaped by the 'global', then what of the opposite? In this session we would like to explore the glocalization in different spheres of life in the Roman world, understanding this notion as 'the refraction of a global phenomenon through local entities', defined as such by sociologist Victor R. Roudometof. The Roman Empire took control over a territory located on three continents, thus multiple cultural interactions, influences, and transitions were unavoidable. Glocalization can concern different aspects of religion, art, and material culture. We will study how identities were manifested in various ways within the globalising Roman world, especially in the provinces, and what this could have meant to the whole Roman Empire. We welcome papers dealing with different types of evidence, from different chronologies, and different areas of the Roman Empire, but dealing with the phenomenon of glocalization or its theoretical framework.

ABSTRACTS

1 ETRUSCAN, ROMAN, MEDITERRANEAN... GLOCAL AND PERSONAL? SOCIORELIGIOUS AND MEDICAL APPROACH TO THE ANATOMICAL VOTIVES IN THE NATIONAL MUSEUM IN WARSAW

Abstract author(s): Dziurdzik, Tomasz (National Museum in Warsaw) - Grzegorska, Aleksandra (University of Warsaw)

Abstract format: Oral

Among the artefacts in the Collection of Ancient Art in the National Museum in Warsaw, there is a number of "Etruscan" anatomical votives and other, mostly "Roman" objects with representations of body parts or their imprints. The complicated provenance of this rather eclectic group (including objects transferred to the Museum after the second world war from different collections, as well as private donations) means that their origins can be reconstructed only approximately. Paradoxically, this lack of detailed information on their archaeological contexts facilitates a new angle of their analysis. It helps us drop wide, ethnopolitical labels such as "Etruscan" or "Roman" from the conversation on what were quintessentially glocal religious practices within the globalizing Mediterranean in the Hellenistic/Republican and Early Imperial periods. Those depictions of body parts were individual appropriations of a shared visual language that were employed in different ways within local religious contexts. They shaped the lived religious experiences through their materiality, including, as Graham (2020) put it, "the tripartite affectivity of these offerings as objects manipulated in the moment of ritual, as material things, and as bodily proxies". Due to the fact that their physical manufacture and creation of additional meaning happened in interactions between artisans, the dedicants, and any groups associated with sacred spaces in which the votives were deposited, each of them was at the same time a materialisation of collective medical, anatomical, and religious knowledge. It will be demonstrated that the body part votives expressed religious identities that were at the same time local and global, individualised and shared, and could be used to convey various messages through the use of a common media. Thus they were at one level a globally understandable phenomenon, but on the other an expression of local and individual identities.

2 EPIHETS IN ROMAN DALMATIA

Abstract author(s): Perinic, Ljubica (Croatian Academy of Sciences and Arts, Division of Archaeology)

Abstract format: Oral

Currently, Croatian Science Foundation is funding the research project titled 'Among Gods and Men, The Cults and the Population of Roman Dalmatia According to the Votive Inscriptions' and the main goal of the research project is a thorough review and/or revision of the votive inscriptions and figural representations of the deities and their systematization, which will result in extensive insight into social aspects of religious beliefs, traditions, practices, and their combined impact on the evolution of cultural identities. In Roman religion, an epithet is a descriptive term or title attached to a deity's name. Epithets can be identifying or characterizing a deity and they serve to identify the deity and distinguish them from other gods and goddesses. They often reflect the deity's attributes, powers, or sphere of influence. For example, the Roman goddess Juno was known as Juno Moneta, which translates to „Juno the Warned,“ reflecting her role as a goddess of prophecy and warning. Epithets can be divided in six categories, and the most numerous are those describing the function of a deity or its particular manifestation. The intention and goal of this paper is to collect the epithets that appear on the votive inscriptions of the Roman province of Dalmatia in order to determine which and what elements of glocalization can be observed and applied to the mentioned spectrum, and whether the changes are vertical (chronological) or horizontal (territorial), or both.

3 GLOCALITY OF RELIGION IN ROMAN LIBURNIA

Abstract author(s): Mech, Anna (University of Warsaw)

Abstract format: Oral

Roman Liburnia was the northern part of Roman Dalmatia, situated between the modern rivers Raša and Krka. In pre-Roman times this region was inhabited by Liburnians mentioned in literary sources as nautical people. The region quickly developed contacts with Greeks and Romans, who were somewhat puzzled by elements of their culture. Ancient authors, especially Pseudo-Scylax in his "Periplus", underlined the position of women in Liburnian society, writing that those people were ruled by women. Nevertheless, it is more probable that it was a sort of exaggeration of some customs which were different from what was known in the Greco-Roman culture.

Liburnia was also quite exceptional in Roman times. The society quickly accepted Roman customs, both religious and cultural, but simultaneously they adapted them to their own traditions (visible in archaeological and epigraphic material), a perfect example of glocalization. The second one draws particular attention in terms of studying religion in the Roman Empire through votive and funeral inscriptions. In Roman Liburnia an exceptionally high number of these inscriptions were set up by women or for them. Among them there are some referring to local traditions: there is a name of the local goddess, a local name on them or even the original, local shape of the monument. This paper will aim to analyse the relation of those "local" elements with "global" trends.

4 MERCURY "GLOCALIZED"? DISCREPANCIES OF A CULT

Abstract author(s): Szigli, Kinga (Ludwig-Maximilians-Universität München)

Abstract format: Oral

Pre-Roman and Roman religion show a complex correlation: significant sociocultural changes and vivid interaction between cults & religious practices on local and global level. The development of new hybrid religions clearly indicates the mutual impact of the Roman and local religions on each other. While local cults and religion seem to dominate in certain provinces (e.g. Gaul, Germania, Britannia), other territories, such as Illyrian and African regions show a rather Romanized or "globalized" picture, with scattered relics of local cults. Moreover, within the same province there are territorial differences between the intensity of local and global sociocultural interactions, also according to various categories of archaeological material.

Whilst literary testimonies merely provide general information on local cults and essence (vis) of deities, epigraphy shows a more coherent picture (giving names & identity). However, this is the case only in the Western and North-western provinces, whereas inscriptions in other regions hardly show any sign of indigenous cult under the "Roman" surface. Similarly, statuettes of gods seem to present pre-Roman iconography only in certain territories.

Is this discrepancy a matter of different speed in the process of glocalization in different territories, part of a translation process (interpretatio or translatio)? Which consequences could this interaction have on society and religion? How does religion fit into this process? Can we define and differentiate local communities & identities in the provinces according to the different pace of glocalization?

Current work attempts to answer such questions in a multidimensional context from the perspective of religion, sociology with the help of a case study about Mercury's cult in Pannonia, where statuettes are put in contrast to votive inscriptions and ancient texts, as well as to some significant epigraphic sources and statues from provinces with a different intensity of glocalisation, such as Gaul, Germania and Britannia.

THE IMPRINT OF WEANING: NEW METHODS TO APPROACH EARLY LIFE NUTRITIONAL CONDITIONS

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace) - Stefanovic, Sofija (Laboratory of Bioarchaeology, Department of Archaeology, Faculty of Philosophy – University of Belgrade)

Session format: Regular session

Infant feeding practices influence short and long-term health outcomes and survival at later stages of life. Central to early life development lies breastfeeding and weaning which have profound consequences on demography, health status and disease for mothers and children. As biological mechanisms, they monitor infant health and are firmly rooted in human physiology. As culturized activities, are influenced by cultural, ethnic, and societal values, ideas and beliefs.

Understanding the choices behind the upbringing of children in ancient societies is of paramount importance in bioarchaeological research. The innovations that have emerged in bioarchaeological methods have provided the unprecedented opportunity to reconstruct early life nutritional conditions of the past. These findings have evoked ideas of life history theory and the developmental origins of health.

The objective of this session is to enhance our understanding of weaning behavior in past societies from osteological, paleopathological, bio-archaeological, demographic, and genetic perspectives. We intend to explore multi-tissue and multi-disciplinary approaches (stable isotopes, histology, aDNA) new applications/tools and machine learning implementations to reconstruct ancient weaning practices. With this premise in mind, we welcome papers that represent the whole breadth of research areas and uncover the blueprint of infant feeding practices in past societies in the light of the constantly evolving methods from analytical and computational techniques.

ABSTRACTS

1 INFANT FEEDING IN THE NORTHERN MESOLITHIC – A CASE STUDY FROM YUZHNIY OLENIY OSTROV

Abstract author(s): Eckelmann, Rebekka - Batanina, Olga (University of Helsinki)

Abstract format: Oral

This study presents the first results of investigations into early childhood diet and weaning strategies at the Mesolithic site of Yuzhniy Oleniy Ostrov/Russia.

Nutrition during infancy and childhood is one of the key determinants for health status in later life and as such has been subject of intensive research in the life sciences, ethnography as well as archaeological research. In Europe the archaeological research has, however, primarily been focused on agricultural communities. Since variations in weaning behaviour, being a product of both biological need and (often distinct) cultural practice, have been linked to wider differences in childrearing and to a lesser degree subsistence system, this is a gap in our understanding of prehistoric Hunter-Gatherer-Fisher (HGF) lifeways that only recently has started to diminish.

As such we have conducted high-resolution sequential analyses of Carbon and Nitrogen stable isotopes on the dentine of 23 individuals from Yuzhniy Oleniy Ostrov – the largest Mesolithic burial site in the European North. By combining this analysis with other bioarchaeological methods, we examined dietary life histories and patterns of infant nutrition. The investigations revealed a high variance in early life dietary intake between individuals, including differences in the duration of the weaning process and the composition of supplementary weaning foods.

These results conform with the high diversity of burial practices visible at Yuzhniy Oleniy Ostrov, which have previously been interpreted as an indicator for the potential presence of subgroups within the burial community. Simultaneously, this data set constitutes an important step forwards to improve our understanding of HGF lifeways and childrearing in prehistoric Northern Europe.

2 DIACHRONIC CHANGES IN WEANING PATTERNS DURING PREHISTORY AT LOS CANES CAVE: NEW DATA FROM ISOTOPE ANALYSIS ON DENTINE SEQUENCES

Abstract author(s): Higuero Pliego, Antonio (Instituto Internacional de Investigaciones Prehistóricas de Cantabria - IIIPC; Universidad de Cantabria-Gobierno de Cantabria-Grupo Santander) - Salazar-García, Domingo Carlos (Departamento de Prehistoria, Arqueología e Historia Antigua, Universidad de Valencia) - Schulting, Rick (School of Archaeology, University of Oxford) - Arias Cabal, Pablo (Instituto Internacional de Investigaciones Prehistóricas de Cantabria - IIIPC; Universidad de Cantabria-Gobierno de Cantabria-Grupo Santander)

Abstract format: Oral

Los Canes cave is a key site in northern Spain (Asturias) to understand the daily life and the funerary practices during the Mesolithic due to the burials and good preservation of the individuals found within the cave, which allows the study of diet at both the individual and group level. New radiocarbon dates on several isolated teeth also showed the presence of human remains from the Bronze Age, previously unexpected. Previous bone collagen stable carbon and nitrogen isotope studies indicated a terrestrial C3 diet for Mesolithic adults. We now present the dentine sequence analysis of a series of four Mesolithic and eight Bronze Age teeth to also study the evolution of childhood diet of twelve individuals from these prehistoric periods.

Our results suggest for the Mesolithic individuals a weaning period that could last until three or four years of age, time during which the maternal milk might have provided an additional nutritional source for the last hunter-gatherer groups of the Iberian Peninsula. No evidence for periodic use of marine foods could be detected, despite the coast being only ca. 10 km from the site. During the Bronze Age weaning period appears to have been more variable. While some individuals experience an extended weaning duration similar to that of the Mesolithic, others were weaned as early as the first year of life. This latter data must be interpreted in the archaeological context of a productive society where a social hierarchization process was taking place. Also, we observed the introduction of new C4 crops during the Bronze Age in the Cantabrian region, which had likely an impact on the population. The combination of these “new” cereals with the already known C3 crops provided grain during all the year, resulting in different dietary strategies for children during their first years of life.

3 DIETARY ASPECTS OF RURAL CHILDREN IN THE LITHUANIA PROPRIA (16TH-17TH CENTURIES)

Abstract author(s): Brindzaitė, Ruta - Jankauskas, Rimantas (Vilnius University)

Abstract format: Oral

As diet and disease can set the irreversible individual pathway for the whole life course, a thorough examination of mature and immature individuals from a bioarchaeological context can cover daily life aspects that have remained unrecorded in historical documents. Childhood life experiences in the Grand Duchy of Lithuania are still scarcely studied. Here we aim to present childhood diet and disease prevalence among the Vievininkai sample, and discuss infant feeding practices and weaning in relation to the presence of pathological conditions among non-adults. The rural community in Vievininkai was a village located around 30 km west of Vilnius. The Vievininkai burial ground was used by inhabitants of the village and the surrounding area during the 16th-17th centuries. Standard procedures of sex and age estimation, as well as osteometric and pathological analyses, were supplemented by stable isotope (carbon and nitrogen) analyses of incremental dentine. Out of a total of 88 individuals, 28 were estimated as younger than 18 years of age at the time of death. The results revealed the presence of scurvy, rickets, and non-specific stress indicators among the non-adults. In addition, stable isotopes indicated the dominance of a terrestrial, C3 plant-based diet for both adults and non-adults. Moreover, it appears that breastfeeding did not last long (until the first year of life), whereas weaning ceased at around three years of age (n=9). This is the first study using incremental dentine analysis to reconstruct childhood diet in early modern material from the territory of the Lithuania propria, thus encouraging scholars not only to reconsider previous interpretations and possible new scenarios, but also pointing out the variety of diets, the complexity, and the need for such analyses in the future.

4 RESOLUTION: COMPARING ISOTOPIC WEANING PROFILES IN PERMANENT AND PRIMARY TEETH

Abstract author(s): Beaumont, Julia (University of Bradford) - DeWitte, Sharon (University of Colorado) - Redfern, Rebecca (Museum of London) - Montgomery, Janet (Durham University)

Abstract format: Oral

The aim of this study is to investigate whether analytical methods using incremental dentine collagen carbon and nitrogen isotope ratio profiles of primary molar and M1 from the same individual show the same patterns: or does temporal blurring in M1 affect the quality of the potential interpretations of breastfeeding and weaning?

Primary molar teeth develop from the last trimester of pregnancy with the crown completed at about 9 months of age; permanent M1 crowns contain tissue from around birth to 3.5 years \pm 6 months. Beaumont Method 2 (2013) in

a primary molar gives isotopic profiles containing an in-utero value for the first ½ mm and an average of approximately 3 months per 1mm sample, while M1 yields approximately 7-9 months per sample. Using 1mm sections from primary teeth is therefore better for investigating the breastfeeding/weaning period but these will not be available from the adults in a population. In order to improve the temporal resolution of the M1 data, a new method of micromilling using the method described in the paper by Curtis et al. (2022) has been employed.

The paired primary molar and M1 datasets from 18 modern individuals from the Tooth Fairy Project (with known breastfeeding histories) and 9 individuals from the Black Death period site of Thornton Abbey from the project “Diet, Migration and Health in the Context of Medieval Mortality Crises” are presented as a guide to help researchers decide how best to interpret incremental dentine collagen data from M1 teeth in future.

5 DIFFERENT INFANT FEEDING PRACTICES AND “WEANING STRESS” IN EARLY MEDIEVAL BAVARIA

Abstract author(s): Velte, Maren (State Collection for Anthropology, Munich - SAM) - Czermak, Andrea (State Collection for Anthropology, Munich - SAM; School of Archaeology, University of Oxford) - Grigat, Andrea - Seyr, Elsa - McGlynn, George (State Collection for Anthropology, Munich - SAM) - Lösch, Sandra (Institute of Forensic Medicine - IRM, University of Bern) - Harbeck, Michaela (State Collection for Anthropology, Munich - SAM)

Abstract format: Oral

The sensitive period in early childhood coincides with the introduction of complementary foods and the weaning process. This can result in so called “weaning stress”. Physiological stress during the weaning process is affected by the age at the introducing of complementary foods, contaminated or quantitative insufficient food and the duration and frequency of continued breastfeeding. The period of greatest risk occurs after breastfeeding has ceased completely: nutritional and antimicrobial support of breast milk discontinues but exposure to pathogens and dietary needs increase while the children’s immune system is not yet fully developed. But also cultural, socio-economic and environmental factors can influence whether a child experiences stress during or after weaning.

We investigate infant feeding practices and potentially associated stress in 38 individuals buried in Bavaria during the transition from Late Antiquity to the Early Middle Ages (ca. 350–450 AD: n=4; 500 AD: n=23, n=13 of non-local origin; 7th century AD: n=11). Isotope profiles of serial dentine samples from 1st molars are compared to the formation of linear enamel hypoplasia (LEH) in the anterior dentition. Additionally, a new model to assign chronological ages of dentine samples and a customized scheme to estimate the approximate age at the cessation of weaning are presented.

The highly variable $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ values within isotope profiles represent different diets of breastfeeding females, complementary foods and post-weaning diets, as well as individual weaning patterns. Cessation of weaning occurred mainly between age two and three. Longer weaning periods are often observed in women of non-local origin, likely displaying weaning practices of other communities.

A change of post-weaning diet in the 7th century coincides with increasing LEH. These stress markers most frequently occur during the end of weaning and the post-weaning phase which supports the assumption that children are at increased risk during this time.

6 BREASTMILK CONSUMPTION AND PHYSIOLOGICAL STRESS: A MULTIPROXY INVESTIGATION OF WEANING USING STABLE ISOTOPES, LINEAR ENAMEL HYPOPLASIA AND BAYESIAN MODELING

Abstract author(s): Souleles, Angelos - Ganiatsou, Elissavet - Bantavanou, Panagiota - Georgiadou, Angeliki - Papa-georgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

Abstract format: Oral

Carbon and nitrogen stable isotope ratios in dentinal collagen provide a useful means to study ancient individual diets sub-annually, best epitomized by the opportunity to reconstruct their breastfeeding and weaning durations. Bayesian isotopic mixing models can further improve our understanding of past diets by estimating the relative contribution of different food sources. Research into increasing the precision in weaning durations has taken place, however, limited focus has been given to the quantification of breastmilk during weaning in relation to health outcomes, since this condition increases the risk of developing diseases during infancy. In this study, we estimate the relative amount of breastmilk during weaning and examine whether its restricted consumption correlates with the manifestation of physiological stress in ancient individuals.

The weaning processes of 65 individuals from the site of Thessaloniki dated to the Roman period (168 BC-324 AD) were reconstructed through the measurement of nitrogen and carbon isotopes on incremental collagen of their first permanent molars. Breastmilk and supplementary foods were estimated using the Bayesian mixing model MixSIAR.

The timing and duration of Linear enamel hypoplasia (LEH), an abnormal deposition on tooth enamel caused mainly by malnutrition and infections, were used to reconstruct physiological stress episodes through histological analysis of permanent canines or incisors sampled from the same individuals.

Our results demonstrate that infants consuming less than 50% of breastmilk during weaning (n=25/65) showed multiple LEH defects whereas those who consumed more than 50% did not. We found that LEH occurs close to the age at completion of weaning or afterwards. This line of evidence shows that breastmilk deprived individuals show frequent and severe morbid events during infancy and indicates the association between weaning and LEH. With our assay, we hope to provide a starting point for more sophisticated approaches on early life nutrition in the past.

7 PREHISTORIC WEANING EQUIPMENT: METHODOLOGICAL CONSIDERATIONS

Abstract author(s): Stefanovic, Sofija (Department of Archaeology, Laboratory for Bioarchaeology, Faculty of Philosophy, University of Belgrade) - Petrović, Bojan (Faculty of Medicine Novi Sad, University of Novi Sad) - Jovanović, Nikola (Faculty of Medicine Novi Sad, University of Novi Sad) - Porčić, Marko (Department of Archaeology, Laboratory for Bioarchaeology, Faculty of Philosophy, University of Belgrade)

Abstract format: Oral

During the last decade, isotope analyzes have provided important novel evidence about breastfeeding and weaning in the past. Despite these significant advances in understanding of weaning practices, archaeological artifacts remain poorly studied when it comes to children's feeding practices. Although we can assume that prehistoric people produced objects that were used for weaning, such types of objects have been rarely detected so far. One of the possibilities for such objects to be confirmed is to reveal traces of deciduous teeth marks on them, since it is known that children very intensively bite objects that we feed them with. In order to develop the method for the detection of teeth marks on bone objects, in our previous study, we compared experimentally produced deciduous bite marks on animal bones with marks on the Early Neolithic bone spoons, and we had shown that spoons were used for feeding. In additional study, presented here, we experimentally produced bite marks by deciduous teeth on pottery. Elastic modulus and hardness were examined using nanoindentation, and samples of 483 bite marks were analysed using SEM with 20–50x magnification, DSLR camera, and profilometer, in order to detect bite marks dimensions. Comparison of experimentally obtained data on pottery, with marks on different types of prehistoric ceramic vessels, give us opportunity to detect prehistoric ceramic „weaning equipment“ and to provide methodological guidance for similar studies which may discover artefacts used for weaning. Further development of methods and approaches to detect artifacts that could have been used for weaning is very important, as the data on the presence, types and quality of production of „weaning equipment“ could provide a lot of information about the communal organization of weaning, attitudes towards children's feeding as well as about its changes over time.

8 A WEAN-WEAN SITUATION: DIACHRONIC PATTERNS OF INFANT AND ADULT DIET IN ANCIENT THESSALONIKI THROUGH THE ANALYSIS OF INCREMENTAL DENTINE

Abstract author(s): Ganiatsou, Elissavet - Souleles, Angelos - Choupa, Maria Nefeli - Bantavanou, Panagiota - Georgiadou, Angeliki (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace) - Protosalti, Tania - Tzevreni, Stavroula - Konstantinidou, Krino - Vasileiadou, Stella (Ephorate of Antiquities of Thessaloniki City, Ministry of Culture and Sports) - Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

Abstract format: Oral

Technological advances have enabled the analysis of weaning durations on individuals of different sex, age, and archaeological background by measuring the carbon (^{13}C) and nitrogen (^{15}N) isotopic ratios in bone and dentine collagen. The aim of this study is to combine stable isotope analysis and Bayesian modelling to show probabilistic variations between infants', children', and adults' diets over time.

We analyzed individuals dated to the Roman period (168 BC-324 AD) from Thessaloniki, the capital of the Provincia Macedonia that played a leading role in economic, administrative, and cultural transformations in southeastern Europe.

Infant and childhood diets of 65 individuals were reconstructed through the measurement of nitrogen and carbon isotopes on serial dentine collagen samples from their first permanent molars. Additional 160 individuals were analyzed to reconstruct adult diets measuring the $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ ratios on bone collagen from femora. The relative contribution of food sources was estimated with the Bayesian mixing model MixSIAR and weaning duration was reconstructed with the application WEAN.

We found that 57 individuals breastfeed up the age of two or older with different proportions of breastmilk during weaning. 32/57 individuals consumed equal parts of breastmilk and supplementary foods (breastmilk: 55%, fish: 16%, animal protein: 15%, C4 plants:10%, C3 plants: 4%). 25/57 individuals consumed less breastmilk than other foods (breastmilk between 26%-48%, fish: 20%, animal protein: 20%, C4 plants:14%, C3 plants: 4%). Eight individuals

were never breastfed or were weaned shortly after birth (fish: 46%, animal protein: 37%, C4 plants:8%, C3 plants: 9%). Childhood diets differ from adult diets in the consumption of C4 plants, which are used only as infant food. This study sheds light on the infant and adult feeding choices in the southern Roman Empire that reflect impalpable aspects of early life and nutrition.

487 FORTIFICATIONS AND DEFENSIVE BEHAVIOUR IN SOCIO-HISTORICAL AND CONTEMPORARY CONTEXTS: BEYOND SOCIO-POLITICAL COMPLEXITY AND EUROCENTRISM

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Schreiber, Tanja (Institute of Pre- and Protohistoric Archaeology, Kiel University) - Garcia-Piquer, Albert (Department of Prehistory, Autonomous University of Barcelona) - Messal, Sebastian (Lower Saxony State Service for Cultural Heritage) - Podėnas, Vytenis (Lithuanian Institute of History, Department of Archaeology) - Andersen, Anna-Theres (ROOTS of Conflict, Kiel University)

Session format: Regular session

Material remains referred to as fortifications, hillforts, or enclosures have traditionally been associated with stratification, centralisation, and/or the rise of elites competing over power and prestige. In this context, fortified sites represent costly signaling and material manifestations of violent conflicts between people. The emergence of fortifications in small-scale societies has particularly been discussed in connection with resource abundance and the need to protect surpluses, leading to the emergence of territorial ownership and institutionalised social inequality.

However, archaeological and anthropological research, especially outside of Europe, draws a different picture: communities that construct fortifications instead draw upon this de-escalation strategy to defy centralisation and successfully prevent violent conflicts. These principles of autonomy and coordination manifest materially in different forms, including the construction of fortifications, which can be found in societies of various political structures and subsistence strategies. Enclosed sites thus embody particular socio-historical events, negotiations, as well as peaceful and violent interactions between people.

This observation raises the question of how defensive behaviour is connected to social hierarchy in non-western societies, including those in the past. Do socio-political complexity and monumental investments in community defence go hand in hand? Or can the construction of defences be coordinated at various levels of socio-political organisation? Can they actually represent conciliation rather than conflict?

Approaches from disciplines other than archaeology, including written sources, can help to shed light on human social organisation and coordinated defensive action. Of special interest is the potential interdependence of socio-political organisation, landscape modification, and the construction of place in past and living societies. Papers exploring the roles and functions of defensive architecture beyond archaeological sources are especially welcome. The session aims to capture a cross-geographical comparative historic approach to discussing the social implications of fortification construction on a global scale.

ABSTRACTS

1 DON'T EVEN THINK ABOUT IT. EARLY FORTIFICATIONS AS A NEGOTIATION STRATEGY IN THE EASTERN BALTIC

Abstract author(s): Podėnas, Vytenis (Lithuanian Institute of History)

Abstract format: Oral

The development of early fortifications in European prehistory has been understood as both the necessary action for security as well as the establishment of centers for accumulating stock, trade goods, and hosting specialized knowledge. Naturally, a wider variety of artifacts found in these sites compared to unenclosed ones encouraged discussions around the emerging economic power in certain localities. However, the potential actors that caused the perilled environment are hardly identifiable and overlooked. In this paper, I propose to discuss the defensive systems as embedded actions of communities to negotiate the manner of future contacts with extra-local groups of people. This approach allows analyzing communities not only as passive reactors to a potential threat but also as actively engaging in intraregional social and economic development. Late Bronze Age fortified settlements in the Eastern Baltic region were created in varied environments and were not exclusive to highlands or riverine lowlands, but both. This indicates a shared potential for intraregional trade routes in larger river basins and their bordering areas, where land routes between these basins could have been established. Current data support the hypothesis of local communities as active agents in developing regional economic networks and not passive reactors to external threats. This means that for

de-escalation a condition of the unfavorable subject of aggression was unavoidable and necessary before any other contact development could have happened.

2 WALLED PASTORALIST SITES IN WESTERN CHINA: SUBTLETIES OF EMERGING SOCIAL COMPLEXITY

Abstract author(s): Betts, Alison (University of Sydney)

Abstract format: Oral

The highly unusual appearance of walled hilltops in the Bortala Valley in western Xinjiang may be associated with early signs of social inequality among Late Bronze Age transhumant pastoralists. The hilltop sites contain very small clusters of residential structures and overlook one of the richest areas of seasonal pasture in the Bortala Valley in the western Tian Shan. The walls do not fully encircle the residential structures but protect the most vulnerable points of access to the hilltops, and in particular protect against direct access from the pastures. It is suggested that they were lookout posts, with a small garrison of herders prepared to defend the area in the event of attack by rival pastoralist groups. This early sign of direct competition and potential conflict, together with group control over prime resources, is significant in terms of regional patterns of increased social complexity in the Eurasian (eastern Andronovo) Late Bronze Age.

3 CONSTRUCTING FORTIFICATIONS - DECONSTRUCTING COMPLEXITY: HUNTER-GATHERER ENCLOSURES IN SIBERIA THROUGH A POSTHUMANIST LENS

Abstract author(s): Schreiber, Tanja - Piezonka, Henny (Institut fuer Ur- und Fruehgeschichte Kiel)

Abstract format: Oral

Archaeologists have become increasingly critical of the social evolutionary thinking of the 19th century. However, in academic practice many archaeological studies continue to be shaped by evolutionist views on social complexity. This is especially evident in research into the emergence of fortifications attributed to “complex” hunter-gatherers, usually relying on explanations rooted in evolutionary ecology. Such approaches postulate a linear path to social complexity, with environmental changes as the impetus for social change, leading to the construction of defensive sites as manifestations of political power and economic imbalance. Consequently, complexity in hunter-gatherer lifeways is largely explained by the emergence of some form of inequality.

In this paper we seek to demonstrate the benefits of utilizing posthumanist conceptual frameworks in fortification and hunter-gatherer research. By framing social complexity through fluidity and entanglement, we have tested potential relationships between fortification construction and social inequality, using West Siberian hunter-gatherer settlements as a case study. We applied the Gini index to house size distributions of c. 300 fortified and unfortified settlements from the end of the 7th millennium BC to the 17th century AD. Our results reveal a correlation between (i) phases of increased fortification construction and higher levels of inequality and (ii) architectural changes towards homogeneity and a simultaneous decline in inequality, with oscillations between these two modes through time. The social organisation of the Siberian hunter-gatherer communities revealed complex socio-material interdependencies: people were agents with the capacity to act collectively by repeatedly counter-acting emerging inequality through the transformation of architectural space in a way that helped foster community solidarity.

Our paper provides new insights to counteract entrenched evolutionist notions of social complexity in fortification research as we demonstrate the formation of a socio-material network of people, things, and practices coalescing in the formation of hunter-gatherer enclosures in Siberia.

4 GARDENS OR THE BUSH: A COMPARISON OF MĀORI FORTIFICATIONS BETWEEN HORTICULTURAL LANDSCAPES WITH THE NEW ZEALAND HINTERLAND

Abstract author(s): Allen, Mark (Cal Poly Pomona)

Abstract format: Oral

New Zealand featured the development of widespread fortifications to protect people and resources. The vast majority of these are located close to the ocean in areas which were conducive to producing the sweet potato due to lower incidences of frost and longer growing seasons and had ready access to kaimoana (seafood). The Māori economy, however, was largely dependent on gathered plant resources such as the bracken fern root, hunted birds, and fresh-water resources such as eels and mussels. Though less common, fortifications were constructed in inland regions far from appropriate horticultural zones and the ocean. Comparison of these types has thus far been given only cursory attention by archaeologists. This paper examines these through analysis of fortifications in the Heretaunga (Hawke's Bay) region of the east coast of the North Island in the whenua (land) of the iwi (tribe) Ngāti Kahungunu. It utilizes archaeological and environmental data woven together through Māori history and whakapapa (genealogy).

5 INDIGENOUS FORTIFICATIONS ON THE SOUTHERN GREAT PLAINS OF NORTH AMERICA: THE DEVELOPMENT OF WICHITA PALISADES, 1450-1800 C.E.

Abstract author(s): Perkins, Stephen (Oklahoma State University) - Drass, Richard (Oklahoma Archeological Survey) - Vehik, Susan (Department of Anthropology, University of Oklahoma)

Abstract format: Oral

Occupying numerous villages on the southern Great Plains, Native North Americans, known today as the Wichita, figured prominently in the region's political economy during the European Colonial Era. From the 16th to early 19th centuries, ancestral Wichita groups avoided Spanish colonial domination while developing trade relations with French *coureurs de bois* from Louisiana. A number of European reports over these centuries document circular palisades within Wichita villages serving as a refuge from potential native or European attacks. In a well documented incident on Oklahoma's Red River in 1759 C.E., Wichita defenders and Comanche allies decisively repelled a Spanish military expedition sent from southern Texas. In testimony after the battle, Spanish officers described their surprise in finding the Wichita barricaded within a large palisade and condemned the Wichita's French allies for designing it. Modern historians using Spanish colonial documents also attribute historic Wichita fortifications to French design.

For the past twenty years, we have used geophysical analyses, archaeological testing, and excavations at four ancestral Wichita village sites in Oklahoma to gather evidence concerning palisades and their social context. Earlier investigations and our findings demonstrate their indigenous origin. Palisades were constructed 300 years earlier (approximately 1450 C.E.) than historians suggest. They grew in size and complexity over time. Later examples (1700 to 1800 C.E.) indicate greater labor expenditures in digging circular ditches external to the palisades; the construction of semi-subterranean shelters within them; and an increase in their overall circumference. We hypothesize these changes reflect Wichita coalescence into larger villages caused by the intensification of conflict in the southern Plains by 1700. The arrival of horses led to greater mobility in intertribal raiding and increased competition for southern Plains resources like the American bison as tribes sought greater access to European commodities.

6 FORTIFYING THE SOCIAL AND THE BARRIERS TO CONFLICT AMONG THE NATIVE PEOPLES OF LA FLORIDA

Abstract author(s): Thompson, Victor (University of Georgia)

Abstract format: Oral

What are the social barriers to conflict among sedentary people who pursue hunting and gathering economies? Are these barriers manifested in formal institutions that subvert opportunities for conflicts to escalate? If present, to what extent and scale do such institutions operate? Are there tipping points where they cease to function? Do these institutions dramatically differ from those groups who practice agriculture? In this presentation, I consider these various questions by exploring the histories of the various Native American groups that inhabited 16th century La Florida. I compare and contrast both inland agriculturalists, coastal fisher-gatherer-hunters, and groups that pursue a mixed economy of hunting, gathering, and farming to explore both the metaphorical social fortifications these groups created, as well as materialized fortifications, such as palisade walls, related to conflict among these groups. This analysis highlights the differences and similarities in various institutions related to fortification among people following divergent economies in the region.

7 FORTIFYING DEFENSES, DELINEATING COMMUNITIES: INVESTIGATING THE SOCIOPOLITICAL ASPECTS OF COAST SALISH FORTIFICATIONS

Abstract author(s): Angelbeck, Bill (Douglas College) - Grier, Colin (Washington State University)

Abstract format: Oral

For over 1600 years, Coast Salish peoples have employed a range of strategies to construct defensive fortifications at various scales, from small household protections to full palisades shielding a village community. An analysis of these structures provides insight into their forms of sociopolitical organization and labour mobilization. The largest defensive structures that indicate the cooperation of multiple households within a community, which is uncommon for a culture in when the autonomy of local groups generally predominated. Further, such complexity is generally seen as uncharacteristic of fisher-hunter-gatherer societies and others lacking intensive agricultural practices, yet these have been evident in the Salish Sea for at least one to two millennia. Combining ethnographic and oral historical knowledge with archaeological evidence, this research explores the dynamics of Coast Salish sociopolitical organization and labour mobilization in constructing large defensive fortifications in largely decentralized fashion. In so doing, we aim to demonstrate how these fortifications reveal the delineations of community as manifested materially.

8 COAST SALISH FORTIFICATIONS AND THE CONSTRUCTION OF COMMUNITY IN THE POST-CONTACT PERIOD OF THE NORTHWEST COAST OF NORTH AMERICA

Abstract author(s): Grier, Colin (Washington State University) - Angelbeck, Bill (Douglas College)

Abstract format: Oral

With the arrival of settler (European-derived) populations in the 19th century, Coast Salish peoples adopted defensive fortifications similar in style to that used by Colonial powers, including stockades, bastions, and block houses. This adoption has been seen as the borrowing of new techniques to improve Indigenous defensiveness, particularly to meet the threat of armed gunboats and other Colonial military tactics. It is important to recognize, however, that Coast Salish peoples were familiar with and had employed not dissimilar defensive infrastructure for several millennia. With this recognition, several lines of inquiry as to Coast Salish defensive practices and their relationship to community structure emerge. The particular organization of Coast Salish communities has been debated, but their communities have been seen as relatively fluid entities structured along lines other than a common village identity or collective action. The question explored in this paper is whether the kinds of defensive infrastructures employed in the early post-contact period (from roughly the early 1800s) both required and materialized new forms of community organization that were structured more by defensive considerations than prior to contact. Given the dramatic demographic changes and social upheaval of the 1800s, we consider how the shifting nature of defense relates to the re-organization of communities to face qualitatively different external and existential threats than prior to contact.

9 A SEAFARING PERSPECTIVE: EXPLORING THE INTERPLAY BETWEEN BOATS, WATERSCAPE AND DEFENSIVE STRATEGIES ON THE NORTHWEST COAST OF NORTH AMERICA

Abstract author(s): Garcia-Piquer, Albert (Universitat Autònoma de Barcelona; Washington State University)

Abstract format: Oral

Archaeological research of the past decades provides abundant evidence for the indigenous development of labor-intensive fortifications as well as for the use of defensive sites, forts or refuge rocks, throughout the Northwest Coast of North America. The organization of defences and their materialization in defensive features in the landscape have been fully analyzed (e.g. Angelbeck 2016), as well as the quantitative relationships between site location, fortifications and the defensive qualities of the landscape (Martindale and Supernant 2009). Adding to previous studies, this work will address hunter-gatherer fortifications or defensive sites from a water-based, seafaring perspective. Indeed, at least during the early contact period, boats -particularly large war canoes- were the cornerstone of a regular form of interaction between indigenous communities that consisted of surprise attacks and rapid retreats. Therefore, the shoreface of sites can be thought as the frontline of defensive organization. As it has been pointed out, particularly on the North coast, exposition to local winds and even the presence of swirling tidal currents provided additional protection from attacking enemies (Moss and Erlandson 1992). In that sense, the work will explore the way in which water-based defensive qualities (coastal outline, currents, winds, eddies...) were integrated into the broader defensive organization of settlement. The spatial differences in the accessibility or defensibility of local waterscapes within and between regions of the Northwest Coast will be evaluated with quantitative and GIS-based methods, with particular attention to differences between coastal and riverine systems. Finally, the research will discuss the ways in which the development of advanced transport technology -its social implementation- helped to stimulate new levels of socio-political complexity, perhaps intensifying both violent and non-violent interactions between indigenous communities.

10 SO BIG, IT GOT LOST. THE REDISCOVERING OF SAXO'S PUBLIC FORTIFICATION

Abstract author(s): Lauritsen, Leif (Museum Lolland-Falster)

Abstract format: Oral

In early autumn 2016, Museum Lolland-Falster carried out a small excavation on a location called "Trygge Castle", a hourglass-shaped ridge with steep slopes on 3 sides. According to the academic view of the site, nothing of the medieval castle, located somewhere on this ridge, should have survived the decades of plowing.

But folklore, priests and the medieval historian Saxo told about a place in the surroundings where all of the people of the rather big island of Falster could seek refuge when attacked and a local village is named after the Danish name for a public fortification a "virket". A fortification was in the start of the 20th century located as up to three, up to 1,5km long and half circle shaped moat and rampart running through the forest of Hannenov bog and forests. Around 1,5 km from the mentioned ridge. Shortly after the discovery of these ramparts in the forest were proclaimed to be The public fortification told about by Saxo.

Local folklore and the local inhabitants in the surroundings kept claiming that the place for the common stronghold was on or near Trygge Castle, but around 1930 these claims faded away. The excavations of 2016, 2020 and 2021 at the Trygge site now points to the site for the Virket at the location of the Folklore.

A MEDIEVAL FORTRESS IN THE LIGHT OF WRITTEN SOURCES AND ARCHAEOLOGICAL DATA - THE CASTLE OF CSÓKAKŐ (HUNGARY)

Abstract author(s): Kovács, Bianka (Institute of Archaeology, Research Centre for the Humanities, Budapest) - Hatházi, Gábor (Ministry of Culture and Innovation, Budapest) - Kovács, Gyöngyi (Institute of Archaeology, Research Centre for the Humanities, Budapest)

Abstract format: Oral

Many of the written sources of the medieval Kingdom of Hungary were destroyed as a result of the Ottoman-Hungarian wars in the 16th and 17th centuries and later the Second World War. Because of these events, there are relatively few medieval fortress of which we have significant written sources from the period. The castle of Csókakő provides a good counter-example in this respect. Csókakő is located about 25 km from Székesfehérvár, the crowning city of medieval Hungary. The castle was built in the second half of the 13th century on the edge of the Vértes Mountains. It was owned by royalty and important lords during the Middle Ages, and came under Ottoman rule in 1543-1544, which was essentially continuous until 1687. The building's destruction began after the first decades of the 18th century.

Between 1996 and 2017, considerable archaeological researches and monument restoration works were carried out on the castle grounds. So the area of the fortress is almost completely known archaeologically, providing a good basis for comparison with written sources.

There are several direct and indirect written sources about the castle and its estates from the 15th-17th centuries. These sources and the archaeological data complemented, confirmed or refuted each other during the research. There are also descriptions of the castle from the 18th-19th century, which provide a basis for the interpretation of some architectural details and early modern artefacts. In our presentation we will present lessons learned from the use of this data, which may also be useful for researching similar strongholds in the wider area.

RARE AND PRECIOUS. RECENT ADVANCES ON THE ANALYSIS OF ARCHAEOLOGICAL WOOD [PAM, ARCHWILD]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Leder, Dirk (Niedersächsisches Landesamt für Denkmalpflege) - López-Bultó, Oriol (Department of Prehistory, Universitat Autònoma de Barcelona) - Vidal-Matutano, Paloma (Department of Prehistory and Natural Sciences, University of Basel) - Piqué Huerta, Raquel (Department of Prehistory, Universitat Autònoma de Barcelona) - Milks, Annemieke (Department of Prehistory, University of Reading)

Session format: Regular session

Archaeological knowledge of past technologies is generally founded on durable materials such as stone, pottery or metal. However, most material culture in the past consisted of perishable organic materials that are now all but absent from the archaeological record. The rare preservation of organics affects our understanding of ancient lifeways where wood was an essential raw material used for fuel, timber, tools and crafts. Woodworking was an essential craft activity in the past involving deep knowledge of plant availability, the mechanical properties of species, and the development of specialized tools for managing, obtaining and transforming wood. For this reason, the study of wooden artefacts and woodworking tools provide valuable information on traditional technological and ecological knowledge.

Despite the difficulty in identifying and recording woodworking activities in the past, tool marks on wood remains are the most direct evidence and they are known from contexts as early as the early Pleistocene. This session aims to bring together specialists on the analysis of archaeological wood through archaeobotany, experimental archaeology, tool-mark analysis, use-wear analysis, dendrology or ethnoarchaeology. Contributions from any geographical and chronological context are welcome. We particularly invite submissions highlighting new methodological approaches, analytical tools, and protocols to identify, record, and analyse wood technologies.

ABSTRACTS

1 THE COMPLEXITY OF MANUFACTURE AND DESIGN OF MIDDLE PLEISTOCENE WOODEN TOOLS

Abstract author(s): Milks, Annemieke (University of Reading, Department of Archaeology) - Leder, Dirk (Lower Saxony State Office for Cultural Heritage) - Koddenberg, Tim (Georg-August-University Göttingen) - Lehmann, Jens - Terberger, Thomas (Lower Saxony State Office for Cultural Heritage)

Abstract format: Oral

One-piece wooden implements are known from a small number of African, Asian and European Middle Pleistocene archaeological sites. Objects are interpreted on the basis of morphometrics, use-wear analysis, ethnography, and ex-

periments as digging sticks, planks, hunting spears and throwing sticks. They are characterised as ‘simple’ because they are one-piece tools made of a material characterised as easily sourced and worked. Some researchers, notably Miriam Haidle, show the multi-step process to craft ‘simple’ wooden spears, such as those from the MIS 9 site of Schöningen. However in absence of detailed analyses, it was impossible to appreciate the depth of manufacturing processes and design. Here we share a case study of a double-pointed stick from Schöningen, analysed within a framework using nomenclature developed specifically for the analysis wood tools. We share details showing a focused acquisition of raw material, and a multi-step manufacturing process to craft an aerodynamically and ergonomically designed tool.

On the basis of lithics and dating, Schöningen is typically referenced as Lower Palaeolithic. We argue that the wood-working by Middle Pleistocene hominins at Schöningen and elsewhere foreshadows future Middle Palaeolithic technological and material innovations. For example, the selection of and potential orientation of the tool to take advantage of harder wood anticipates later innovations involving use of harder weapon tip materials including stone and bone. Evidence of seasoning and possible application of fire treatment also foreshadows subsequent innovations such as treatment of lithics in the African Middle Stone Age, and other transformative technologies like adhesives during the Eurasian Middle Palaeolithic. Treatment of the raw material, a preconceived design and selection and orientation of the blank, and a multi-step manufacturing process implies a complexity that cannot be understood without this in-depth analysis. The nature of complexity of manufacture and design in turn implies significant skill and a complex learning process.

2 METHODOLOGICAL ADVANCES IN THE ANALYSIS OF THE SCHÖNINGEN WOODEN HUNTING WEAPONS

Abstract author(s): Leder, Dirk (Lower Saxony State Office for Cultural Heritage) - Milks, Annemieke (University of Reading) - Koddenberg, Tim (Georg-August-University Göttingen) - Lehmann, Jens (Lower Saxony State Office for Cultural Heritage) - Terberger, Thomas (Lower Saxony State Office for Cultural Heritage; Georg-August-University Göttingen)

Abstract format: Oral

Wood as a raw material is a widely available resource, that is relatively easy to work and shape, quite resilient, and thus has been used by humans since prehistory. Its importance in daily activities of prehistoric people has thus been acknowledged by archaeologists for a long time. Unlike lithics, pottery, or metal artefacts, artefacts made from wood rarely survive in the archaeological record and thus omit pivotal evidence connected to a major component of past human material culture and daily life. The Middle Pleistocene site of Schöningen has provided a wealth of not only lithics, worked bone, and processed faunal remains, but first and foremost wooden artefacts with an outstanding preservation. During rescue excavations in an open cast lignite mine between 1994 and 1998, Schöningen 13 II-4 – the so-called spear horizon – has delivered ten spears, one throwing stick, and another pointed and partially charred artefact called Bratspieß or skewer. While these items have been published in a number of papers over the years what has been missing is a thorough evaluation of the complete wood assemblage and an in-depth study of traces connected to crafting, use, re-use, and taphonomy on a piece by piece basis. As part of a research project funded by the German Research Foundation (DFG), we performed such studies following recently developed standards for the analysis of wooden artefacts in accordance with chaîne opératoire principles. This approach provides new insights into past human craftsmanship, raw material selection, tool use, re-use, and taphonomy. We will present our applied methodology exemplified based on well-documented wooden hunting weapons from Schöningen 13 II-4. Our results provide an advanced understanding of past human behaviour and planning depth while expanding our knowledge of woodworking workflows in Palaeolithic hunter-gatherers.

3 WOODEN INDUSTRY AT THE MIDDLE PALAEOOLITHIC SITE OF ARANBALTZA. NEW INSIGHTS ON NEANDERTAL WOODWORKING IN THE IBERIAN PENINSULA

Abstract author(s): Lopez-Bulto, Oriol (Universitat Autònoma de Barcelona) - Rios-Garaizar, Joseba (Bizkaiko Arkeologi Museoa) - Piqué, Raquel (Universitat Autònoma de Barcelona) - García Boullosa, Laura (Bizkaiko Arkeologi Museoa)

Abstract format: Oral

The production and use of wooden tools in the European Lower- Middle Palaeolithic has been indirectly attested through use-wear analyses, but direct evidence is much more scarce, most likely due to preservational biases, and only a few sites have yielded preserved wooden tools. Aranbaltza III is part of this select group of a few archaeological sites due to the identification of a short yew digging stick, the oldest wooden tool in the Iberian Peninsula. In this work, we will complete the overview of the wooden industry at Aranbaltza III by presenting the archaeobotanical, technological and functional analysis of other fourteen carbonised and organic wooden archaeological materials from US4-US6 excavated at the test pit made in 2015.

Aranbaltza III is an archaeological site which includes several archaeological horizons dated between ca. 137 and 50 ka, attesting to the long-term presence of Neandertal communities in the North of Iberia. Therefore, the materials presented in this work will be a unique insight into Neandertal woodworking in the Iberian Peninsula and an extremely valuable complement to the scarce information on European Palaeolithic archaeological wood. The analysis of the materials will show tool marks, morphological features of the wooden elements, and a broad strategy of taxonomical selection.

4 VINTAGE WINE LOOKING FOR A NEW BOTTLE? - TOOLMARK ANALYSIS THEN AND NOW

Abstract author(s): Sands, Rob (UCD School of Archaeology)

Abstract format: Oral

Nearly 33 years ago, as part of PhD research at Edinburgh University, I began the process of working out how to record and analyse toolmarks found underwater on an Iron Age lake dwelling site in Scotland. In fact my interest in these marks had begun 2 years earlier, when, as an undergraduate, I had been diving on the site to gain excavation experience. In the process I was introduced to the topic that was to become the basis for my undergraduate thesis and subsequently my PhD. After completion of the PhD in 1994, I wrote a small book summarising the findings of this research, published in 1997. Since that time I left and then returned to archaeology. Remarkably, at least to me, over the intervening years the book has continued to be cited. However, it is a work that was written three decades ago and the techniques available to us have moved on in ways that were simply unimaginable in the early 1990s. These new approaches and technologies are now being used in excellent and imaginative ways by new generations of researchers. This short presentation will summarise and reflect on my original work, the questions it posed and the potential it sought to examine. In doing so the paper will explore how things have changed, how the exploration of toolmarks is being realised today, and some of the questions that remain.

5 EXPLORING DRINKING PRACTICES IN NORSE GREENLAND: INTERDISCIPLINARY ANALYSIS OF A UNIQUE TYPE OF STAVE-BUILT VESSELS

Abstract author(s): Pinta, Élie (School of Human Evolution and Social Change, Arizona State University; Museum of Archaeology, University of Stavanger)

Abstract format: Oral

Wood was an essential material for people living in most parts of Scandinavia. Recent archaeological data obtained from Viking Age and Medieval sites across the North Atlantic islands (c. 9th-15th century) show that there too, Norse settlers continued to rely heavily on this material despite more limited access to wooden resources.

In Greenland, wooden stave-built vessel components represent some of the most common finds in Norse contexts. Recent studies indicate that most staves were used to manufacture small, open-topped vessels that could be used for a wide range of domestic activities but are most likely linked to the preparation and consumption of food and drinks. Among a sample of over 700 wooden 'small finds' from Norse Greenlandic farmsteads, a handful of staves – mostly made of juniper wood (*Juniperus* sp.) – were identified as pieces of refined cups frequently displaying intricate decoration. These may well have been used to consume specific beverages – alcoholic or not – and/or on certain occasions.

In this presentation, I use ecological, technological, and ethnological data, along with literary sources, to explore drinking practices at the edge of the Norse world. Which types of beverages were consumed and by whom? Are these vessels a material representation of cultural connections and trends shared across the Norse diaspora? Can we identify local adaptations in the form of vessel types, or the manufacturing processes involved in their making? Do the consumed products vary due to environmental factors? I will explore these questions in the context of past and present drinking practices from across northern Europe.

6 THE WOODEN SOUL OF THE FORTRESSES IN THE IBERIAN PENINSULA MIDDLE AGES

Abstract author(s): Celma Martínez, Mireia (ARHIS, Universidad de Murcia) - Eiroa Rodríguez, Jorge A. (Universidad de Murcia) - Martín-Civantos, José María (Universidad de Granada) - Rouco-Collazo, Jorge (INCIPIT-CSIC) - Baño López, Ana (Freelance archaeologist) - Baños Serrano, José (Ayuntamiento de Alhama de Murcia) - Bellón Aguilera, Jesús (Freelance archaeologist)

Abstract format: Oral

Medieval fortifications evidence the use of plants as auxiliary elements in much of its constructions. In archaeological and reintegration interventions, the presence of remains of needles, beams, and other fiber elements in the already deteriorated walls is usually detected, which have lost their lining and exposed the interior to the weather.

Both discovery and recovery are extremely limited, making it a rare and precious material where interventions have been mostly carried out in the circumstantial recovery of these elements to obtain radiocarbon dating and thus con-

trast the results with the whole material locally. In others, their remains have been extracted and deposited, as the result of conservation and restoration work, pending consultation by researchers. From the written sources, it should be noted an increasing presence of the fluvial and long-distance Mediterranean timber trade. The DendroMED research line, ARHIS Research Group (www.um.es/arhis), arises from the need to deepen forestry for the use of woody plants and fibres in monumental constructions in the peninsular territory and, specifically, in the southeast (current territory of extreme aridity) to observe the existence of territorial and chrono-cultural differences to approximate the capacities of forest management according to the changing medieval geopolitics, considering the paleoecological environment.

The results of the detection and analysis of more than 47 fortresses dating from the 11th to 15th centuries have been collected, with up to 21 taxa used for the construction, where differentiated patterns of wood use have been identified. Along with the written resources and the identified taxa, more archaeometry and GIS analyses are in development.

7 THE USE OF WOOD AND CHARCOAL IN THE CONSTRUCTION OF THE ROYAL BURIAL MOUND GOMILA IN JALŽABET (CROATIA)

Abstract author(s): Kovacevic, Sasa (Institute of archaeology, Zagreb)

Abstract format: Oral

One of the most significant prehistoric landscapes in continental Croatia lies south of the Drava River in the Jalžabet and Martijanec micro-region, southeast of Varaždin, in the Plitvica - Bednja Rivers basin (Northwest Croatia). This Early Iron Age landscape consists of the remains of extensive settlements, necropolises, and some of the largest burial mounds in Central Europe. The recent rescue archaeological excavation of Gomila in Jalžabet brought to light an extraordinary amount of data from closed archaeological contexts, while the most important finds from burial mound 2 (excavated in 1989) are already well known. In these monumental tombs made of wood and stone with a square floor plan and ceremonial access corridors - dromoi, we recognize the last resting places of the Hallstatt aristocracy. The burial mound Gomila in Jalžabet is one of the largest prehistoric monuments of its kind ever researched in central Europe and we assume that it belongs to the last in a series of rulers of the Eastern Hallstatt Culture (mid-6th century BC). Among the wide spectrum of finds, a special place belongs to the complex construction of a monumental burial chamber. Large quantities of charcoal were thrown on the outside of the wooden-stone burial chamber. The reason behind this practice is still not clear.

8 KNOWLEDGE, SKILLS AND RESOURCES: WOOD CRAFT AS AN INDICATOR OF DIVISION OF LABOUR AND SPECIALISATION IN ANCIENT TIMES

Abstract author(s): Boenke, Nicole (Ruhr-Universität Bochum)

Abstract format: Oral

Wooden materials in archaeology are often not considered to be precious, if they do not represent exceptional evidence of elaborate craftsmanship. At best, the fact that wooden artefacts are often only rarely preserved makes them appear desirable. In cases when favourable preservation circumstances allow the numerous transmissions to the cultural heritage, thousands of wood-fragments beside entire wooden artefacts easily appear as a logistic problem for archaeological excavators and institutions because of their demands on the storing facilities. In those cases, wood seems to be more irritating than valuable.

The announced paper will deal with different approaches in manifesting the "value" of wood at archaeological sites as well as the value for the ancient societies themselves. In this respect, the value of wood is not only measured by the degree of its availability or in the uniqueness of the processing techniques or surface treatments. Rather, the degree of utilisation and the care of craftsmanship are important factors of the rating, even if the artefact itself seems to be of minor interest. The perception of daily practice in this case represents a value in its own right.

The considerations presented base on comparative case studies of tools, other artefacts and waste wood from ancient salt exploitation sites from Europe and Western Asia with their special needs for archaeological conservation. The paper will illustrate how the documented skills and knowledge of the ancient craftsmanship do contribute to the discussion of sociocultural conditions if we are thinking in dimensions of how to trace specialization or the division and organisation of working processes.

9 WOOD IN THE BRONZE AGE EURASIAN STEPPE CULTURES: IDENTIFICATION, VARIATIONS OF 87SR/86SR ISOTOPES AND RECONSTRUCTION OF ANCIENT LANDSCAPES

Abstract author(s): Shishlina, Natalia (EAA)

Abstract format: Oral

In the south of the East European Plain wood was used by different population groups as construction material. Xylo-tomic analysis of wood samples helped to determine taxonomic affiliation of wood fragments. The estimated variations in the strontium isotopic ratios of wood samples are helpful in understanding whether wood was local or nonlocal. Most analyzed items were made of wood that came from the tree species which naturally lived and reproduced in the areas where the sites are located. Direct radiocarbon dating of the wood samples from the analyzed assemblages confirms that in 3000 calBC maple, ash, oleaster, willow, elm and aspen grew in the south of the East European Plain.

Thus, forest resources were actively exploited by the populations. Another important result of the study is the conclusion that the wood used to make the parts of the wagon found in a Catacomb grave at Ulan IV was local. It means that, most likely, the wagon was made in the Sal-Manych steppes. The pollen spectra of the buried soil also confirm the results of the analysis performed to estimate variations in the strontium isotopic composition of the examined wood fragments. These data show that by the early 21st century the steppe landscapes were completely changed through human economic activity.

10 ASSESSMENT OF MANUFACTURE AND USE OF PREHISTORIC WOODEN ARTIFACTS BY BIOMOLECULAR ARCHAEOLOGY

Abstract author(s): Bertin, Ingrid (Departament de Prehistòria, Universitat Autònoma de Barcelona; CEPAM, UMR 7264, Université Côte d'Azur) - Colonese, André - McGrath, Krista (ICTA, Departament de Prehistòria, Universitat Autònoma de Barcelona) - Piqué, Raquel (Departament de Prehistòria, Universitat Autònoma de Barcelona) - Théry-Parisot, Isabelle (CNRS, CEPAM, UMR 7264, Université Côte d'Azur)

Abstract format: Oral

Wooden artefacts are exceptionally preserved in Mesolithic and Neolithic contexts of the Iberian Peninsula. La Draga (Banyoles, Spain), dated 5300–4900 cal BC, is one of the few Early Neolithic sites particularly rich in plant-based objects and with a high diversity of wooden objects: bowls, spoons, combs, sickles, handles, needles, worked wooden sticks, arrows and armaments... Previous studies on these objects focused 1) on the assessment of functionality by reconstructing their original shape and looking for use-wear traces, 2) on plant resource management through taxa identification and in correlation with other archaeobotanical proxies, and 3) on material technology by studying anatomical features and tool marks. However, little has been done to explore the organic residues present on many items, which can attest the exploitation of certain resources and on the manufacture of complex and composite artifacts, including plant fibers, adhesives, resins or waterproofing substances in addition to wood. These superficial residues can also shed new light on the direct use of these objects, and provide valuable insights into the substances stored, sealed, processed, and treated within them. This research aims to present the preliminary results of biomolecular analyses applied to these plant artefacts, and to highlight the interest of this method to identify technological knowledge related to the production and use of these objects. Macro and microscopic observations coupled with chemical analyses allow the identification of the material used in the composite artefacts. The identification of protein makes it possible to determine the nature of the residues and to know whether they come from animal or plant resources, and in some cases to specify the type of product and its origin. The work involved in the entire artefact's production could be highlighted, and different specific uses identified.

491 ATLANTIC CONNECTIONS IN THE FIRST MILLENNIUM AD: CERAMICS, TRADE AND ANYTHING ELSE?

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Doyle, Ian (The Heritage Council of Ireland) - Duggan, Maria (School of History, Classics and Archaeology, Newcastle University,; British School at Athens)

Session format: Regular session

This session takes a starting point from a growing understanding of the complexity of trade and exchange along Europe's western Atlantic fringe in late antiquity and the early medieval period. A better understanding of ceramic exchange from the fifth to the seventh/eighth centuries AD has developed in recent years through the increased networking of researchers and better data. Coherent terminology across the Mediterranean and Atlantic zones has helped improve knowledge of the distribution and chronology of late Roman fine wares and amphorae. While there has been a longstanding recognition of imported coarse wares in western Britain and Ireland (the so called 'E ware'

pottery type) there is now a growing body of knowledge of these same ceramic types in their area of production in western France.

While imported ceramics of early medieval date have been long studied in western Britain and Ireland they are generally seen as a phenomenon peculiar to the fifth-seventh centuries. This session seeks to place these imports against a broader, long-term background of exchange along Europe's Atlantic littoral in the first millennium AD. How does this 'post-Roman'/early medieval dynamic connect with systems of commodity exchange active in the Atlantic region in the first half of the first millennium and what is the evidence for this? What can development-led and research excavations and artefact analysis conducted over the past twenty years tell us about enduring networks of trade or redistribution, or patterns of consumption, in the Atlantic zone? Do the ceramics that we see in western Britain and Ireland represent demand for liquid cargoes and dining vessels, or were other items also in circulation? What were the dynamics in western France, Portugal and Atlantic regions of Spain that led to the circulation of Mediterranean and Atlantic pottery and other exotic goods in the Irish Sea area?

ABSTRACTS

1 ANYTHING ELSE? AN IRISH ENTREPÔT AND THE ROMAN WORLD

Abstract author(s): Baker, Christine (Independent)

Abstract format: Oral

Drumanagh promontory fort is a nationally important Iron Age archaeological site and is of international significance in terms of Ireland's relationship with the Roman world. The site which consists of a headland of c.46 acres defended by a series of earthworks has long been acknowledged as of being of great significance in the context of Roman trade along the east coast of Ireland. Three seasons of community-based research excavation have been undertaken to date, and the results, from structure types, evidence for textile and craftwork, to the recovery of at least four different types of pottery, glass vessels fragments and personal adornment from the Roman Britain and beyond, are adding immeasurably to our knowledge of this Iron Age site and its place in the world. This paper will detail the imported finds which date to the 1st-3rd century AD and attempt to place them in the context of trade and redistribution.

2 TINTAGEL, CORNWALL, UK, IN LATE ANTIQUITY: RECENT RESEARCH EXCAVATIONS TCARP2016-2017

Abstract author(s): Nowakowski, Jacky (Freelance archaeologist) - Scutt, Win (English Heritage) - Duggan, Maria (University of Newcastle) - Bayliss, Alex - Campbell, Gill - Baker, Polydora - Paynter, Sarah (Historic England) - Tyson, Rachel (Freelance glass specialist)

Abstract format: Oral

The spectacular coastal citadel of Tintagel, north Cornwall, UK, occupies a special place in late Antique Britain and early medieval research. Excavations in the 1930s and 1990s have revealed exceptional archaeology with artefactual evidence for connectivity with maritime networks along the Atlantic sea-board and places in the Mediterranean basin. Such connectivity has framed narratives about the distinctive character and identities of elite communities in early medieval South West Britain. The site continues to yield new data and major results from recent excavations by Cornwall Archaeological Unit for English Heritage Trust in 2016-2017 will be presented (TCARP – Tintagel Castle Archaeological Re-search Project). Intact buried middens, early buildings, exceptional faunal and plant data alongside late Roman imported pottery, glass, and critically, a major scientific dating programme, have all provided the opportunity to enhance interpretation about an exceptional place, and the servicing and functioning of an elite settlement dating to the late 5th and 6th centuries AD.

3 POTTERY IMPORTS TO THE ATLANTIC SEABOARD IN THE 1ST MILLENNIUM AD – THE VIEW FROM TINTAGEL

Abstract author(s): Duggan, Maria (Newcastle University) - Kiriati, Evangelia - Müller, Noémi (Fitch Laboratory, British School at Athens)

Abstract format: Oral

This talk will use the coastal headland site at Tintagel, Cornwall, UK, to consider shifting maritime networks in the Atlantic Seaboard region during the 1st Millennium AD. The phenomenon of Byzantine/ 'post-Roman' Mediterranean and Continental imports to sites in the coastal landscapes of western Britain and Ireland will be reviewed against earlier patterns of exchange, extraction, and consumption. The talk will focus on results of a British Academy project held at Newcastle University in collaboration with the British School at Athens, to catalogue the entire historic collection of 5th/6th century imports from Tintagel, and will highlight scientific analysis conducted at the Fitch Laboratory, which has revealed new types of pottery (transport amphorae) for Britain. Emerging patterns of demand and consumption

will be considered, as well as understandings of the function of imported commodities, such as wine and slipped tablewares, within regional power dynamics. Finally, the Tintagel assemblage will be reviewed against Atlantic exchange patterns developing from the later 6th century, typified by the transport of E ware coarseware and glass.

4 RECENT WORK ON IMPORTED CERAMICS IN 5TH- 7TH CENTURY IRELAND

Abstract author(s): Doyle, Ian (The Heritage Council of Ireland)

Abstract format: Oral

There has been a longstanding recognition of imported coarse wares in western Britain and Ireland (e.g., the Mediterranean fine wares and amphorae and the 'E ware' pottery type) and there is now a growing body of knowledge of these same ceramic types in their area of production in western France and in places like Vigo in northwest Spain.

In Ireland the increased pace of archaeological excavations has led to an improved understanding of these imported pottery types. This paper will set out recent analysis from the high status trivallate ringfort enclosure at Garranes, Co Cork, from a series of excavations at the mouth of the river Boyne, in eastern Ireland and point out zones of contact and activity associated with early medieval power centres.

The Garranes inter-disciplinary project (2011-18) revisited the excavation results from 1937 and allowed a reassessment of the chronology of the pottery assemblage at what is probably a royal settlement complex. Increased planning-led archaeological excavation in the area south of Drogheda, south of the river Boyne has created opportunities to see early medieval settlement and funerary landscapes. In this location significant quantities of imported ceramics were mediated through coastal contact points to be redistributed further inland with the river Boyne acting as a means to access the interior of the then kingdom of Brega.

5 UNITING THE STUDY OF E WARE: NEW UNDERSTANDINGS AND A NEW CHARACTERISATION OF AN ATLANTIC SEABOARD CERAMIC PRODUCT

Abstract author(s): Fernández Fernández, Adolfo (Universidade de Vigo) - Cau Ontiveros, Miguel (ERAAUB) - Fantuzzi, Leandro (Universitat de Barcelona) - Guitton, David (INRAP) Marache, Valérie (Bordeaux Council) - Le Bomin, Joachim (Institut français d'archéologie orientale) - Duggan, Maria (Newcastle University) - Doyle, Ian (Heritage Council) - Campbell, Ewan (University of Glasgow)

Abstract format: Oral

This paper will establish a 'state of knowledge' for E ware pottery, and consider new understandings of its composition, production, typology and distribution. This ware was originally categorised through its discovery at sites in western Britain and Ireland of c. 6th-8th century date, but its precise origin and function have been widely discussed in by different scholars.

This talk will summarise knowledge of this ware as an Insular import, before introducing new information on discoveries in its (now recognised) source region of South West France, as well as finds from North West Spain, signifying export routes heading southward through long-lasting Atlantic networks. This talk will also introduce a new project, with analysis conducted at the University of Barcelona, which represents a unified, international effort to characterise by a combination of various methods (XRD, XRF, OM...), examples of this pottery from all countries within its zone of distribution along the Atlantic Seaboard.

A. BLACK-BURNISHED 1 AND MEDITERRANEAN IMPORTS: THE FRENCH ATLANTIC SEABOARD, ANOTHER MEDITERRANEAN DOOR TO BRITANNIA DURING THE FOURTH CENTURY AD

Abstract author(s): Guitton, David (INRAP - National Institute for Preventive Archaeological Research; Université de Poitiers) - Sireix, Christophe (Bordeaux Métropole)

Abstract format: Poster

Discoveries in recent years of a few examples of Black-Burnished 1 pottery on the French Atlantic coast, more precisely in Bordeaux and its surroundings, can be seen to attest another trade route linking Britain and Ireland and Mediterranean during the second half of the 3rd and 4th centuries AD. If the main route remains the fully maritime course skirting the Iberian Peninsula, another axis is possible: firstly by sea to Bordeaux, then by river to Narbonne, and then across the Gallic Isthmus. The non-negligible import of Mediterranean ceramics (North African red-slipped ware; African, Oriental and Palestinian amphorae...) to Bordeaux and Saintes in the 4th century affirms the vitality of existing links with the south, and highlights the role played by the traditional riverine route of the Gallic Isthmus – and furthermore positions this part of the French Atlantic coast as an immediate and privileged contact zone between British and southern merchants.

B. SOCIO-ECONOMIC IMPACTS OF THE EXPOSURE TO ROMAN CERAMICS IN THE INLAND IRON AGE COMMUNITIES: A QUANTITATIVE APPROACH

Abstract author(s): Rodríguez Nóvoa, Alba - Brughmans, Tom (Aarhus University) - Fernández Fernández, Adolfo (Universidade de Vigo)

Abstract format: Poster

How did the first ever exposure to Roman imported material culture at inland sites affect local material culture practices? What does this reveal about the speed and nature of cross-cultural influence between Roman and Iron Age communities? And about the specific dynamics of integration within the Roman Empire of inland sites? Our ability to address these key questions about the exposure of Iron Age communities to the Roman world is hampered by a research bias in classical archaeology towards the study of ceramics contexts from coastal sites. In this poster we present the first replicable quantified contextualised ceramics data analysis to address these questions, through a study of more than 150,000 sherds from inland sites in the northwestern Iberian Peninsula. We conclude that century-long gradual changes in local common wares and amphorae from Iron Age traditions to Roman-inspired forms reflect changing food consumption and production and consumption behaviours. This transition is also reflected in an increasing presence of imported Roman goods. Our results suggest very gradual but increasing integration with the Roman world and ceramic data patterns correlate with known events from textual sources: Caesar's campaign, the Augustan Cantabrian wars, and the Flavian reforms.

495 LANDSCAPE ARCHAEOLOGY AND ORAL TRADITION

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Vieira, Alexandra (CITCEM.FLUP; Instituto Politécnico de Bragança) - Kyriakidis, Evangelos (The Heritage Management Organization)

Session format: Regular session

To study landscapes in their multitemporality, to make their biographies, we must be aware of two types of phenomena. Firstly, we emphasize the “visible elements”, materialized by archaeological evidence. Secondly, we must consider “the invisible elements”, the immaterial or symbolic dimension of the landscape, which we can try to understand through the analysis of the oral tradition as the manifestation of the social memory of a local community. The landscape is shaped by the intertwining of temporal and spatial relationships.

The practices that perpetuate social memory are inscribed in the landscape and inscribe the landscape itself in the memory of the local communities, since it can be preserved through the continuity of all kinds of practices, either with the same content and/or form, or, through the creation of legends and/or superstitions. To study the way archaeological remains have been integrated into popular beliefs we must be aware that the traditional tools of Archaeology are not enough. So, in order to understand the “time depth” of the landscape and try to make its “biography”, it is essential to analyse their oral tradition, as well as the place names, the historical documentation, the legends, superstitions, practices and beliefs.

Several questions related to these themes can be made, namely: under what circumstances were these archaeological sites discovered? What legends are associated with them? What memories of these sites have been preserved by local communities? How were the vestiges of previous occupations integrated or not? How were materials and structures reused? Is the place name related to the archaeological remains? In short, how can archaeologists study the immaterial dimension of landscapes of the “past” and how are the material traces of these landscapes perceived in current landscapes?

ABSTRACTS

1 THE ROLE OF LOCAL BELIEFS IN SHAPING A SITE: EXAMPLE OF BABIN GRAD IN CROATIA

Abstract author(s): Igljic, Sara (University of Zadar) - Vrkić, Šime (Independent Researcher) - Kulenović, Igor (University of Zadar)

Abstract format: Oral

Landscape archaeology has seen a rise in popularity during the last few decades in Croatia. In the karst regions of the country, the material traces of the past are highly visible in the landscape. As such, the immateriality of landscapes defined in beliefs, oral tradition, and practices is often omitted. The case study of an archaeological site Babin grad is presented in the light of a new perspective that focuses on the local knowledge surrounding the site. It is a fortified position on the river Krupa, near Obrovac in Croatia, with several different accounts of the origins of the name of the site. In older archaeological records there is little to no mention of Babin grad, but its importance and existence are defined through the local oral traditions and the place the site occupies in various stories of the area. This paper will

present a valuable source of research: relationships and perspectives of local communities toward archaeological sites and how it can help us understand the shaping of the landscape in all its temporalities.

2 THE DOUBLE ROLE OF ORAL SOURCES: FROM OBJECT TO SUBJECT OF THE RESEARCH PROCESS IN BOSCO FONTANA SITE (LIGURIAN APENNINES)

Abstract author(s): Piu, Caterina - Stagno, Anna Maria (LASA - Università degli Studi di Genova)

Abstract format: Oral

This presentation offers a methodological reflection about the role of oral sources within archaeological research through the case study of Bosco Fontana site (Val d'Aveto, Rezzoaglio, GE) which has been owned by members of the Fontana family since the mid-15th century and now by their heirs united in the "Family Communion of Bosco Fontana". This study focuses on the archaeological analyses of the traces of past forms of environmental resources management and the transformations that affected them over the centuries, especially in relation to the rights of access and use of environmental resources that has sometimes generated jurisdictional conflicts.

The interest of the research stems precisely from the role that these people play: this study, in fact, originated thanks to the local community's urging to analyse and reconstruct its own history not only to make it usable to a wider public but, above all, to reaffirm and legitimize its rights of use of the resources that constitute a shared heritage, whose value is emphasized by the research operations.

The community represents an important source because it preserves the collective memory of the history of the area, and, at the same time, becomes an active part of the research process by helping to construct its paths and aims. This strong bottom-up drive allows researchers to create a space for dialogue to establish collaborative relationships with the local community and think deeply about the very concept of community and how different social configurations are defined and redefined around resources use. This duality constitutes the focus of the presentation, which aims to reflect on the research perspectives and challenges that the involvement of living actors (who then become oral sources) poses to archaeological research.

3 HOLY MOUNTAINS IN A SACRED LANDSCAPE IN MULTIFOCUS EVIDENCE - A CASE STUDY OF PODLASIE (POLAND)

Abstract author(s): Wawrzoniuk, Joanna (Institute of Archaeology, Cardinal Stefan Wyszyński University in Warsaw)

Abstract format: Oral

In the magical-mythical perception of the world by the „pagan“ Slavs nature was hiding numerous mysteries and inexplicable power that had to be worshiped. An important element of the magical landscape was a mountain, which made a strong numinotic impression. Sacred mountains can be a good example of the materiality of religious beliefs. There is only one condition. They should be considered sacred. Where there are no written sources, archaeological ones are weak, one can use folklore data and oral evidence. In the case of the Slavs, oral traditions are an excellent supplement to the knowledge of spiritual culture. The memory of „holy“ places is preserved, among others, in different legends about so-called castles, Swedish or bald mountains, gods, and demons living on their tops. In Podlasie (Poland) there are a lot of mounds of different sizes and heights. Some of them have their own names: Góra Zamkowa (Castle Mountain) or Babia Góra (Old Woman's Mountain). Numerous legends are associated with them, which were fortunately recorded by researchers. According to several archaeological research, they were used as ritual places in the Iron Age, Middle Ages, and even later. The Podlasie region is also interesting because of the numerous influences of Slavs and Balts, and in later periods also of other communities living there. In my paper, I would like to indicate how analyzing oral traditions and other sources can interpret the sacred landscape, especially the holy mountains, in this region.

4 THE MOORISH TRADITION IN THE PORTUGUESE ARCHAEOLOGY

Abstract author(s): Vieira, Alexandra (CITCEM.FLUP; Instituto Politécnico de Bragança)

Abstract format: Oral

With this work, I seek to understand the perception and presence of the Moors in the Portuguese landscape, from the study of archaeological sites, toponyms, legends and folk beliefs, supported by historical documentation and a wide range of publications that record and analyze Portuguese oral tradition. I chose, therefore, to establish a set of relationships between the archaeological remains, oral tradition and folklore, and demonstrate ways of interpreting or explaining these pre-existing materialities that are part of our tradition.

In particular, I will try to understand the relationship between archaeological remains, and the concepts of the enchanted female Moors and the historical Moors, that punctuate the Portuguese landscape. The landscape reflects the past through a material legacy (archaeological remains) which, although they retain their structure, are part of another temporal and social context, in any case, different. In this way, the reference to a more remote past, framed

in a certain logic of thought (the “wonderful”, the “enchantment”, the “other”, the Moor or the “Moira”) allows us to understand these physical and constructed features of the landscape. Human landscapes are not immutable, and the analysis of toponyms as well as oral tradition, namely legends, allows the understanding of aspects inherited from the past. This allows us to perceive the dynamics of the landscape from an immaterial legacy built through a constant dialectic of memory and forgetting.

5 LEGENDS, PEOPLE, AND THE LANDSCAPE ARCHAEOLOGY OF BORDERSCAPES IN IRELAND

Abstract author(s): Fitzpatrick, Elizabeth (Independent)

Abstract format: Oral

In *Memory, myth and long-term landscape inhabitation* (2013), Chadwick and Gibson suggested that in complex societies with professional bards, ‘fragments of past knowledge in collective memories and oral traditions’ may have persisted longer than the 200-year lifespan attributed by some archaeologists to stable oral tradition within landscapes.

In response, this paper presents an approach to generating dialogues between topography, archaeology, and legend and localized place lore, which has led to the identification of specialized borderscapes that memorialized dynastic histories of Gaelic chiefs in medieval Ireland.

A diagnostic feature of such borderscapes are hills of outcropping rock, designated by the place name *formaoil* (‘bare-topped’) and associated with prehistoric funerary and ritual monuments, and hillforts. They are the settings of battles and raids between the 7th and 16th centuries CE in written histories. In medieval tales, they are the domain of the Irish legendary warrior-hunter and border-hero, Fionn, who is a recurrent figure in recorded oral tradition of rural communities into the twentieth century.

Settlements of medieval poets who served chiefs were situated beside these notable hills, suggesting that they may have been curators of the monuments of *formaoil* and the borderscapes they demarcated.

In view of the involvement of poets with the biographies of bare-topped hills, which extended to poetically relating them to battles lost and won by chiefs and their ancestors, the fragments of modern local lore that associate the heroic deeds of Fionn with prehistoric monuments and topographical features, need reconsideration as connotations of past knowledge about cultural practices in borderscapes. Furthermore, the findings urge that monuments, to which this lore is attached, should not be reductively interpreted as mnemonics but as representations of long-term relationships between borderlands and people in past societies.

6 NATURAL SACRED SITES IN ESTONIA - WITNESS OF OLD BELIEFS IN PRESENT TIME LANDSCAPES AND COLLECTIVE MEMORY

Abstract author(s): Kama, Pikne (National Heritage Board of Estonia)

Abstract format: Oral

There are hundreds of natural sites in Estonia that are or have been considered to be sacred, for example sites where communication with spirits, rituals, offerings or healing activities have taken place. Most commonly, these are sacred trees, groves, stones and springs, sites without manmade structures. Sacred sites combine nature, physical space and intangible culture expressed in form of folklore, place-names, memories etc. – and sometimes also archaeological record.

Although these sites have long been protected as archaeological sites, there may be sacred sites without any archaeological finds as there are many ritual activities which do not leave behind long-lasting traces. The lack of archaeological record could also be the question of the state of research in terms of scale and methods. The limitation of archaeological knowledge makes the dating of these sites difficult. Yet, it can be stated that sacred sites similar to the ones we know today have been recorded in the early written sources about Estonia from the 13th century reflecting pre-Christian beliefs where nature was considered spirited.

Natural sacred sites are not only a source of information about the past, but also an important part of contemporary landscape that needs recognition, systematic study, and protection. Therefore, National Heritage Board of Estonia is leading a project to inventory sacred natural sites in Estonia. The inventory grants us new insight and overview about sacred natural sites and also points out how limited our understanding about human-landscape is, especially when dealing only with archaeological record without oral tradition.

ENHANCING ORAL TRADITION IN FIJI FOR THE STUDY OF ARCHAEOLOGICAL REMAINS. THE CASE OF THE HILLFORTS IN THE NADROGA-NAVOSA PROVINCE

Abstract author(s): Lancini, Loredana (CReAAH - UMR 6566 Le Mans Université) - Duval, Hervé (Société Jersiaise; CReAAH - UMR 6566) - Nunn, Patrick (University of the Sunshine Coast) - Compatangelo-Soussignan, Rita (CReAAH - UMR 6566 Le Mans Université)

Abstract format: Oral

The Fiji Islands represent a stimulating case study for cross-cultural research combining archaeology and the oral tradition. In fact, they present favourable conditions for exploring the oral tradition, since Fijian society retains many contexts where the oral transmission of knowledge is still practiced. The local oral tradition comprises diverse and varied stories bearing valuable contents for the community, well worth being recorded. There are also stories, legends and beliefs linked to old sites inhabited in the past and considered sacred for their symbolic role. Their memory is preserved through ritual practices and is kept vivid in the minds of the local population by performing traditional narratives.

In June 2022 the authors conducted fieldwork in Fiji, in the province of Nadroga-Navosa (Viti Levu, Fiji) as part of the project 'Environmental Changes and Heritage in the Fijian Islands'. The project aimed to study hillforts as well as the oral traditions of the local populations, by means of both archaeological fieldwork and oral surveys. The collected data from the sites of Tabuqutu, Kavukavu, Old Tau, Nakaro, Vasilaulau, and Koromani show that landscape and archaeological remains are well-integrated in local memories and beliefs. Local people are indeed well informed of the type of archaeological remains that could be found on site. Moreover, we were able to collect stories of origins and foundations, still vivid in the memory of the villages, and to understand that place names are directly related to historical and topographical elements. Finally, the symbolic role of the hillforts as the home of ancestors is well rooted in traditional beliefs. This paper aims to present the results of the oral enquiries held in Fiji and to provide insights on the enhancement of local tradition for the comprehension of archaeology in a society where oral tradition is the main tool of social memory.

496 COORDINATION, DISSEMINATION, AND COMMUNICATION - MANAGEMENT TASKS IN THE ARCHAEOLOGICAL WORK ENVIRONMENT

Session theme: 3. Heritage Narratives and Representations

Session organisers: Seidl da Fonseca, Helena (Kuratorium Pfahlbauten - National Management Austria of the UNESCO-World Heritage) - Grömer, Karina (Head of Department of Prehistory - Natural History Museum Vienna) - Črešnar, Matija (Department of Archaeology at the University of Ljubljana) - Alpino, Nadine (DokuPlus - Büro für Dokumentation in Archäologie und Denkmalpflege)

Session format: Regular session

Like many other disciplines in science and humanities, archaeology has much to offer to the broad public and hence finds itself traditionally confronted with the public's wish for information in a variety of settings. In this session, the organizers want to present and discuss different management structures, new and innovative dissemination projects and communication strategies for archaeological heritage sites and research, may it be based at universities, academies, museums and other research institutions.

In general, the session organizers see within the last decade a professionalization in common administrative tasks in the field of archaeology. Special knowledge of project management appears to be expected that still is rarely taught at universities. Also, the archaeologists in charge are seldom professionally trained in the development of educational programs or strategic communication plans. What are the most important components for a holistic archaeological education nowadays? What exactly is needed to insure professionalism in the management part of our work? How can archaeologists already working in research, museums and other institutions achieve this knowledge?

With these and other questions, this session picks up a thread that started at the EAA 2019 Conference in Bern, Switzerland, in a round table session regarding professional communication of archaeological research. One outcome of that session was the need to raise more awareness of the importance and benefits of professional communication within the archaeological community, but also to form a strategy for education.

The session organizers want to take a broader perspective on the topic at the EAA 2023 and feel the need to present and discuss good practice examples, or examples of failures to learn from, in different management structures, dissemination projects, and communication strategies as well as ideas and examples for an integration of these topics in archaeological education and further trainings.

1 SCIENCE COMMUNICATION MANAGEMENT IN COMMERCIAL ARCHAEOLOGY IN AUSTRIA**Abstract author(s):** Hangartner, Jasmin - Binder, Michaela (Novetus GmbH)**Abstract format:** Oral

In many countries such as Austria commercial archaeology represents over 90% of all archaeological field work taking place. These sites worked on by commercial archaeologists are therefore the most common touchpoints for local communities with archaeological fieldwork and the wish to know more about this heritage being excavated is very present. This wish often stands in opposition to the interest of the constructors/owners of the site whose interest is dominated by keeping the spending for the archaeology low and finish their construction projects in time. The possibilities and methods for science communication in this challenging environment of opposing stakeholders as well as the skills needed to succeed with these projects will be the topic of this presentation. The talk will demonstrate how to manage archaeological education projects with different stakeholders in a professional work environment and will be illustrated by the presentation of case studies, such as a garden project dedicated to communicating the story of a close by medieval site and developed in cooperation between a windmill construction company, the municipality, and a local association dedicated to rendering the town more livable.

2 SCIENCE COMMUNICATION AND SOCIAL MEDIA IN PORTUGUESE ARCHAEOLOGY: A BRIEF ANALYSIS TO OPEN THE DEBATE**Abstract author(s):** Cura, Sara (School of Communication and Media Studies)**Abstract format:** Oral

Researchers, as well as scientific institutions, always took action to disseminate their findings and engage the public with their science. How they did it and how they do it now has changed over time while the practice of science communication evolved to become not only of recognized significance but also an essential component of scientific research processes, as well as part of the acknowledged social responsibility of science and scientists. In the last decade, there is a visible and increasing activity of both scientists and scientific institutions to reach out to audiences in a more interactive way using social media such as Facebook, YouTube and Twitter or others.

Portuguese archaeology is no exception and there is a myriad of scientific archaeology institutions, organizations and archaeologists on an individual basis sharing content on social media. However, it remains to be studied how and what is communicated (the focus of this presentation) and the purpose of such communication (a further highly relevant study to be done).

In a first overview of science communication on social media in Portuguese archaeology and to open the debate we present an analysis of the social media use of two major research centres dedicated to archaeology and one preventive and rescue archaeology company. Questions focus on what and how these institutions communicate in their social media and the related engagement (likes, shares and comments) with their audiences.

3 WALK THE LINE: FIRST EXPERIENCES WITH MULTIPLE CITIZEN SCIENCE TARGET GROUPS IN THE TRANSDISCIPLINARY LBK RESEARCH PROJECT "UNITED BY CRISIS?"**Abstract author(s):** Längauer, Julia - Hascher, Cornelia (University for Continuing Education Krems, Center for Museum Collections Management) - Pieler, Franz (State Collections of Lower Austria) - Teschler-Nicola, Maria (Natural History Museum of Vienna; University of Vienna) - Maurer, Jakob (University for Continuing Education Krems, Center for Museum Collections Management)**Abstract format:** Oral

The transdisciplinary research project "United by Crisis?" (2022-2025) aims to investigate a cluster of Early Neolithic sites surrounding the LBK settlement of Asparn/Schletz (Lower Austria), which is famous for human skeletal remains with perimortal defects indicating a violent event approx. 7.000 years ago. Within our research project, joint work with Citizen Scientists is a core feature, additionally motivated by extra resources granted for a "Citizen Science Add-On" by the funding body (GFF NÖ).

The Citizen Science activities within the project include collecting and processing of soil samples for isotope analysis by local schoolchildren and extensive Line Walking-surveys and processing finds by lay experts and other volunteers. As part of our cooperation with Citizen Scientists, we also organize lectures and joint interpretation workshops.

Within this contribution, we want to give a first overview 1) of how the special attention on "Citizen Science" influenced the development, structure and evaluation of the project application and 2) on our experiences with the implementation of the Citizen Science aspects in the project so far. This includes a discussion of the different target groups of Citizen Scientists interacting with the project as well as an introduction to the projects methods, goals, dis-

semination channels and communication strategy. We will also point out problems encountered during our joint work with CS and perceived benefits. Furthermore, we want to outline possible broader impacts that we think cooperation with CS – such as ours – might have on future research projects, archaeology, STEM and the public.

4 WE CAN DO IT – WITH A LITTLE HELP FROM OUR FRIENDS. COMMUNITY MANAGEMENT IN THE CONTEXT OF ARCHAEOLOGICAL HERITAGE

Abstract author(s): Dworsky, Cyril - Poppenwimmer, Fiona - Seidl da Fonseca, Helena (Kuratorium Pfahlbauten) - Fath, Barbara (International & Swiss Coordination Group UNESCO Palafittes)

Abstract format: Oral

When it comes to protection and research of archaeological sites heritage managers have a lot of balls to juggle. They have to keep track of historic sites and artefacts, communicate with heritage agencies, local authorities and landowners, present results, ensure the integrity of their research within the scientific community and create easily accessible knowledge for the public. At the same time, archaeological projects often face a lack of a wider support. This is particularly challenging where there are heritage protection issues that conflict with the interests of other groups of people. That's where community management can help, or be seen as a necessity.

In this paper the speakers present their community management structures and why it is important to consciously evaluate and work on those structures. By the example of the concepts that were developed for the management of the Prehistoric Pile Dwellings around the Alps UNESCO World Heritage Sites in Austria, we show how they were implemented, and the successes and failures that were faced during this process. The speakers will also talk about aspects of inclusion and exclusion of individuals and groups in archaeology – e.g. the sport diving community – and how other partners in this particular World Heritage site deal with this issue.

In our opinion, by working with a community of local historians, educators and other stakeholders or individuals, archaeologists can create a valuable tool to ensure that historic sites and artefacts are much more likely to be appreciated and respected, and consequently better preserved as they are for future generations.

5 SHAPING NEW NARRATIVES THROUGH COMMUNITY-LED ARCHAEOLOGY IN THE BASQUE COUNTRY

Abstract author(s): Egia, Mikel (Aranzadi Science Society, Department of Archaeology) - Mendizabal-Sandonís, Oihane (University of the Basque Country - UPV/EHU, Classic Studies Department; Aranzadi Science Society, Department of Archaeology) - Aiestaran, Mattin (University of the Basque Country - UPV/EHU, Department of Geography, Prehistory and Archeology, Investigation Group of Prehistory IT-1223-19; Aranzadi Science Society, Department of Archaeology) - Narbarte, Josu (University of the Basque Country - UPV/EHU. Research Group on Heritage and Cultural Landscapes; Aranzadi Science Society, Department of Archaeology) - Ruiz-González, Daniel (Aranzadi Science Society, Department of Archaeology) - Conde-Egia, Eider (Aranzadi Science Society, Communication Department) - Agirre-Mauleon, Juantxo (Aranzadi Science Society, Department of Archaeology)

Abstract format: Oral

Over the past 75 years, Aranzadi Science Society has carried out archaeological interventions in the Basque Country based on a philosophy of *auzolan* or collective work. These dynamics can be framed in the theoretical-methodological current referred to as 'social' or 'public' archaeology. In this presentation, we delve into the impact of community-led archaeological projects in shaping the identity and belonging of the Basque society through its heritage. Within this work frame, knowledge is constructed collectively, within the limits imposed by the scientific method, but integrating and valuing the perceptions of those who have a daily relationship with cultural heritage. Thus, heritage is conceptualised as a means to materialise people's collective identity and practices, and this also expands to dissemination and communication activities to give value to local heritage. During our presentation, we will share successful dissemination and communication strategies of different archaeological sites (namely the Hand of Irulegi and Amaier Castle, among others) that have contributed to new understandings of local and regional heritage, as well as how these communities are an active asset from the beginning of the archaeological intervention until its dissemination. We will also show how archaeological sites may turn into cultural resources and contribute to shared memories and creative narratives.

6 SCIENCE COMMUNICATION AND OUTREACH IN AN INDUSTRIAL RESEARCH PROJECT COMPARED TO PROJECTS IN THE ARCHAEOLOGICAL SECTOR

Abstract author(s): Loew, Carmen (RHI Magnesita)

Abstract format: Oral

Having worked in science communication for around 20 years, ReSoURCE is the first project that I communicate outside of the archaeological field. “Refractory Sorting Using Revolutionizing Classification Equipment” is a Horizon Europe project, grant agreement # 101058310, that is coordinated by the global giant for heat resistant B2B products RHI Magnesita. The project aims to reduce Europe’s carbon footprint significantly by developing a sorting unit for the most complex recycling of used refractory products, so that the use of raw material with its intense carbon emissions can be minimized. In the focus of ReSoURCE’s research are therefore mineralogy, artificial intelligence, laser technology, hyperspectral imaging and waste management, to name just a few of the disciplines involved. In the presentation I would like to give an overview of the similarities and differences in terms of science communication, outreach and professional project management between a research initiative in an industrial, business-driven environment and in the archaeological field, which is so often characterized by the rather non-profit nature of the humanities.

7 ENTHUSIASTIC CROSS-SECTORAL COOPERATION IN HIGHER EDUCATION, FOCUSING ON HERITAGE INTERPRETATION

Abstract author(s): Wollak, Katalin (Independent heritage expert) - Kovács, Máté (Budapest University of Technology and Economics) - Anders, Alexandra (Institute of Archaeological Sciences, Eötvös Loránd University Budapest) - Vukoszávlyev, Zorán (Budapest University of Technology and Economics)

Abstract format: Oral

Preparing students for collaborations beyond joint research with their peers in an environment focused primarily on investment-led excavation has been one of the great challenges of archaeological education in recent decades. Acknowledgement and promotion of archaeological research, and the interpretation and reception of the results and the sites themselves by the local community, can only be successful in the long term if researchers present archaeological findings in a way that takes into account and draws on the preferences and priorities of other disciplines as well. Emphasizing a project approach in archaeological heritage management can contribute to this endeavour.

This paper presents some of the positive initiatives in the context of both independent and joint training programmes in various institutions of higher education (such as the archaeology programmes of Eötvös Loránd University and the programmes of the Budapest University of Technology and Economics for architects and heritage engineers), which in many cases receive support from national and international projects.

The management of built heritage, which includes various activities of research, design, restoration and management, requires a comprehensive approach that combines knowledge from different disciplines. The promotion of this holistic approach is of key importance during the training of heritage professionals. Interdisciplinary consortia formed by international projects involving institutions and experts from different disciplines, which generate knowledge transfer between these persons and their fields of study, provide an ideal basis for developing educational and dissemination programmes. The paper discusses the experience gained from educational programmes, based on the themes of an international project, which was used in the education of Hungarian and international undergraduate students of architecture whose training focused on interdisciplinary research in a historical environment, as well as in the post-graduate education of engineers specialised in monument protection.

8 WORLD HERITAGE “PREHISTORIC PILE DWELLINGS AROUND THE ALPS” - MEDIATION VERSUS MARKETING

Abstract author(s): Haggmann, Sabine (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart) - Fath, Barbara (International Coordination Group Palafittes)

Abstract format: Oral

In addition to protection, the mediation of world heritage is of great importance. With the “Prehistoric pile dwellings around the Alps”, UNESCO has an idiosyncratic Monument category placed under the protection of the world community: the World Heritage sites cannot be seen above ground, they cannot be touched and many of the 111 nominated sites cannot be visited.

For the mediation of this World Heritage new paths must be taken. The seemingly easiest way to present the hidden heritage is via the finds – which are not part of the World Heritage – in numerous museums. Reconstructions complement the museum presentation, as well as educational programs of the exhibitions. However, the exhibition of finds conveys neither the idea of world heritage nor the methods with which the excellently preserved organic

materials can be made to speak: How are the results evaluated in an interdisciplinary manner? What do these results mean for the present?

Tourism is listed by the UNESCO as one of the dangers to the World Heritage sites. However, tourism could also be seen as an opportunity, insofar as it raises public awareness of the cross-border significance of the world heritage, its beauty and the economic income for the conservation and care.

Tourism organisations and monument authorities could provide a monument-compatible and promote sustainable tourism in the sense of mediation.

9 HOW TO DEVELOP THE EUROPEAN ARCHEOLOGY DAYS (EADS)

Abstract author(s): Ratier, Pascal (INRAP - National Institute for Preventive Archaeological Research)

Abstract format: Oral

In 2022, the EADs had their fourth edition with great success. More than 30 European countries participated in the event on the third weekend of June. Despite the health crisis, the EADs have continued to grow, attracting more public support, new countries and new organisers with each edition. How can the EADs develop by making an event a place where the public can meet the entire archaeological chain of operations? The event can only find its audience through the intersection of national communication, driven by a national and public player, and communication developed by the local organisers to their usual networks. Another of the fundamental missions at national level is to mobilise all the archaeological actors in the country, „from the excavation to the museum“, so that the public can have access to the diversity of the entire archaeological process. It is therefore essential that the national authorities managing archaeology in each European country be able to coordinate the event on their territory, in order to integrate it into their overall policy of sharing the archaeological heritage. The creation of a network of coordinated organisers at national level in each country is therefore an essential challenge for future editions.

498 IN AND OUT OF CONTEXT: WEAVING THE ITINERARIES OF OBJECTS IN MUSEUMS, COLLECTIONS, AND STOREROOMS

Session theme: 3. Heritage Narratives and Representations

Session organisers: Kathariou, Kleopatra (University of Ioannina - Department of History and Archaeology) - Marini, Christina (Australian Archaeological Institute at Athens) - Colonna, Cécile (L'Institut national d'histoire de l'art - INHA) - Sarti, Susanna (Direzione Regionale Musei della Toscana - Ministero della Cultura)

Session format: Regular session

Objects, in the course of their production and their cycles of use, develop layered histories and form intricate entanglements with both people and things. Object biography has long been a well-established analytical tool for addressing these webs of human-object interactions. In recent decades, updated conceptualisations on materiality, shaped by new materialist and post-humanist thinking, have re-formulated the biographical discourse, placing emphasis on matters of agency, movement, and relationality. Object itineraries have thus emerged as a fresh take on the biographical approach, embracing these theoretical advances and adopting a revised ontological point of view.

This session looks at untangling the itineraries of objects as they transform into subjects of archaeological or art-historical research. We seek to explore how objects, in their literal and figurative movement across time and space, become re-defined, re-interpreted, and re-evaluated, as they enter and leave contexts of circulation, use, and study. The aim is to weave together the narratives of objects, which – whether displayed in museum exhibitions and institutional collections or put away in depots and storerooms – continue to acquire complex relational connections, that are neither linear nor unidirectional.

We welcome discussions on case studies from antiquity to today that employ relevant methodological perspectives, inter-disciplinary approaches, and novel ways of incorporating object itineraries in public, heritage, and educational environments. We are particularly interested in papers that examine how the study of collections and assemblages can be enriched by and benefit from nuanced analysis of object itineraries.

1 THE SECRET OF THE TREASURY OF ATREUS

Abstract author(s): Paschalidis, Konstantinos (National Archaeological Museum, Athens)

Abstract format: Oral

The National Archaeological Museum of Athens keeps over 300 fragments of the stone relief decoration of the Treasury of Atreus in Mycenae. Among them, a fragment of the monument's epistyle stands out, decorated with Mycenaean floral motifs in relief and bearing strange inscribed graffiti from the 18th century AD.

Sir William Gell first identified the epistyle in 1805, reporting that he saw it in a ruined church near the village of Mycenae. Gell did not comment on the engravings, which appear to have been first noticed by the Greek archaeologist Panagiotis Stamatakis in January 1878. Stamatakis retrieved the stone fragment from the church of Saint George and brought it to Athens, along with the findings of his excavation in the Treasury of Atreus.

The epistyle seems to have been collected by a priest in 1758, upon his arrival in the local parish. The word παπαγ could be an abbreviation of his name. The inscription of the rest of the names on the petals of the left rosette and the subsequent engraving of a cross on the name *αναστας* recalls the custom of inscribing the names of the children of a family on icons, in the order of birth and noting the year of death afterwards.

The collection of the inscribed fragment by the priest of Mycenae in the mid-18th century, as well as some spolia of the ornate decoration of the monument, found embedded in the houses of Christians in the area, indicates a kind of appropriation of the ancient artefacts by the Greek Orthodox residents of Harvati (the pre-revolutionary name of Mycenae), who felt the need to preserve them and possibly saw in them the imprint of their origin and identity, 70 years before the Greek War of Independence.

2 SPINNING THE WHORL FOR ATHENA: OBJECT BIOGRAPHIES (RE)DISCOVERED IN STOREROOMS AND THE CULT OF ATHENA ON THE ATHENIAN ACROPOLIS

Abstract author(s): Gavalas, Georgios (Ephorate of Antiquities of the Cyclades, Hellenic Ministry of Culture and Sports)

Abstract format: Oral

A large number of objects, i.e. textile manufacture tools, mainly spindle whorls and loom weights, have been recently found, dating to various periods, but mainly to the Archaic and early Classical ones. Most of them were stored in the medieval tower, known as "Belvedere"; on the Acropolis of Athens; a few more were boxed in old wooden coffin boxes in the National Archaeological Museum storerooms, along with a large number of pottery fragments. These were unknown and no reference to them was implied either in the museum registers or in the extensive bibliography about the Athenian Acropolis.

The material on the Acropolis was stored in hard-to-reach areas, bearing no longer any details about their exact find spot; they were only identified as finds from the old Big excavation on the Acropolis. As for the wooden boxes in the National Archaeological Museum, these were marked as "AKP.", "Akrop." or "from the Akropolis" in possibly two different periods: either a century ago, around 1910, or in the period right after the outbreak of World War II, around 1941.

A recent new study of these humble tools of weaving, clearly overlooked by earlier research allows further discussions on their function on the Acropolis. Their fascinating biographies shed new light on their find spots and their relation to other finds, such as the hand-made terracotta figurines. Moreover, new interpretive issues concerning the activities related to weaving at the main place of the goddess Athena cult on the Sacred Rock during the Archaic and early Classical periods in Athens and Attica may be stressed.

3 FILLING IN THE BLANK PAGES OF AN OBJECT'S BIOGRAPHY: AN OUT-OF-CONTEXT STONE AXE IN THE ARCHAEOLOGICAL MUSEUM OF THESSALONIKI

Abstract author(s): Tsangaraki, Evangelia - Papadopoulou, Stella (Archaeological Museum of Thessaloniki)

Abstract format: Oral

The collections of the archaeological museums in Greece include predominately artefacts that result from systematic or rescue excavations. To a lesser extent, they consist of objects that come from donations of private collections, repatriations, confiscations, voluntary handing-in, etc.; in these cases, the objects that enter the museums are mainly poorly documented and, thus, the museums' curators usually fail to transform them into subjects of archaeological research. As a result, most of these artefacts remain "silent" in the storerooms and hardly ever see the light of a systematic documentation, study or exhibition.

In 2000 a great number of partly preserved antiquities were handed over to the Archaeological Museum of Thessaloniki (AMTh) by an unusual collector: a civil engineer who, while supervising the infrastructure of the rail network, collected ancient artefacts from various places in Macedonia, Northern Greece. Among them there was a shaft-hole axe made by a greenish stone. As a stray surface find, and not a product of systematic excavation, its “biography” remains largely foggy. Despite its common character –such stone tools are usual archaeological exhibits and collection items in museums– this artefact triggered our interest mainly due to its almost perfect state of preservation and its exceptionally skilled craftsmanship. Appearing “too good to be true”, doubts have also arisen as to its authenticity.

In this paper, we will try to unveil the “cultural biography” of this out-of-context stone axe, applying an inter-disciplinary approach (interviews, geological and chemical analysis, survey, bibliographic research, etc.). Our ultimate goal is to discuss its authenticity, to reconstruct aspects of its production, circulation, use and deposition, and to untangle its journey across time and space, from the very moment of its manufacture till its accidental discovery in the 20th century and, finally, its entry to the AMTh’s collection.

4 A MISSED BIOGRAPHY: THE CASE STUDY OF A FEMALE STATUE IN THE NEW MUSEUM OF VERGINA

Abstract author(s): Kyriakou, Athanasia (Aristotle University of Thessaloniki)

Abstract format: Oral

Archaeological objects are entangled in a fascinating network of people, things, emotions and landscape settings. The research aims at unveiling their life episodes, document them in scientific output and communicate them to the wider public. This procedure brings together in a circular movement the objects under analysis, the inquiring minds and the receivers/stakeholders.

This paper seeks to cast light as case study on a prominent find from the archaeological site of Aigai, the first capital of the Macedonian Kingdom. It is the statue of a peplophoros, found in a sanctuary close to the palace and the theatre with epigraphic evidence related to Eukleia, goddess of good repute, and Eurydice, mother of king Philip II. The sculpture was dedicated in the mid-4th c. BC, but four centuries later, following large scale destruction in the sanctuary, it was ritually deposited in a pit. It was brought to light 33 years ago in the framework of the Aristotle University of Thessaloniki Excavation at Vergina project.

The peplophoros is housed for the first time in a museum in the village of Vergina in Northern Greece. It stands still in the central optical axis of an atrium with other sculptures of shiny white marble. Its rich cultural biography is distinctly absent. A short phrase in a general text attributes to it only one identity, its relation to the royals. Its incorporation in the public sphere of the city, the impact on the viewers, the connection to the rest of the sculptures, the manpower and ideology behind its transportation and structured deposition, to name a few aspects of its life history, are not even implied.

It is the obligation of scholars to investigate such discrepancies and point towards alternative suggestions.

5 RETRIEVING IDENTITY FROM FRAGMENTS: THE BIOGRAPHY OF A BRONZE SITULA FRAGMENT FROM OLYNTHUS

Abstract author(s): Touloumtzidou, Annareta - Tsangaraki, Evangelia (Archaeological Museum of Thessaloniki)

Abstract format: Oral

The collections of the Archaeological Museum of Thessaloniki (AMTh) apart from antiquities that come from scientifically conducted excavations, comprise also objects that come from donations of private collections. One of the most significant and sizeable such collection, formed by Georgios Papailiakis (1884-1944), was donated gradually to the AMTh by his heirs.

Among the antiquities of this donated collection is a small, cast made, bronze, relief-decorated fragment, of unknown provenance. We have strong reasons to believe that this small fragment, now in the AMTh, was originally an integral part of a 4th c. BC bronze bell situla with a unique relief decoration, said to have been found at Olynthus, a larger part of which belongs to the collections of the Harvard Art Museums/Arthur M. Sackler Museum.

In this paper we shall try first to argue in favour of this assumption and document that they are both parts of the same bronze vessel. Then we shall try to untangle the itinerary of the original bronze situla and reconstruct its biography, tracing the possible roles that an antiquities dealer, an archaeologist and an antiquities collector of the early 20th century may have played in its fragmentation and its final recipients.

6 THE „BURNT VASES“ AND THE LONG-TERM FORTUNE OF PRESTIGIOUS VASES

Abstract author(s): Colonna, Cécile (INHA)

Abstract format: Oral

During certain periods of antiquity, in Greek or Etruscan cities, the funerals of some elite members were the occasion for a funeral pyre where the most beautiful figured vases, among other valuable goods, were placed beside the dead. The remaining fragments were then buried in the grave. Some of these were discovered there in the 19th century; the appearance of these broken and fragmentary vases was even more intriguing because their orange-red clay had taken on a characteristic grey color on the pyre. They were given an important documentary value as testimonies of funerary rites of which little was then known. In a manner typical of the time, this archaeological value was quickly transferred to an art market which, in the first half of the 19th century, still only concerned a small number of scholarly amateurs. A new category of “burnt vases” appeared in the sale catalogues, and their rarity determined their price. Specimens of these vases then entered the greatest collections. However, this added value was in contradiction with the prevailing practice of the time, which valued quality vases, whole and in good condition, deemed worthy of display in private and public collections. And soon these burnt vases were, in most of the cases, removed from the public eye again and kept in the storerooms.

In this talk, several case studies will be discussed in order to highlight the articulation of the different artistic, religious, archaeological and aesthetic values attached to prestigious vases and to understand the alternating registers of visibility/invisibility at work over a very long period, both in antiquity and in the modern period.

7 THE TRAVEL ADVENTURES OF VASES: FROM ATTICA TO ETRURIA AND FROM THERE ALL-AROUND EUROPE

Abstract author(s): Kathariou, Kleopatra (University of Ioannina)

Abstract format: Oral

Subject-matter of the current paper are vases made in a significant attic pottery workshop, namely that of the Euphiletos Painter. He was one of the most prolific painters of Panathenaic amphorae, active in the last third of the 6th century BC. There are also reported neck-amphorae of standard type and a few amphorae of type A and B painted by his hand, as well as hydriae, oinochoai, column-kraters and two votive plaques from the Athenian Acropolis.

Since Beazley's times the number of vases attributed to his hand has increased, and many more additions have been made possible. Interestingly, there is a considerable number of vases painted by his hand with known provenance.

In respect to the mechanisms of diffusion the traders that carried vases by the Euphiletos Painters followed, it comes out that the most dense and easy to follow commercial network of the particular pottery workshop was to the Western markets. As expected, Etruscan communities dominate, as these were the primary recipients of attic figured pottery exported at this time. It comes as no surprise that the major market for vases painted by the Euphiletos Painter was Vulci.

By taking Beazley's catalogues as a starting point and going backwards, it is possible to follow the travel adventures of a considerable number of vases by his from the very moment they were unearthed in the first half of the 19th century and their first appearance in a private collection all the way to their journey's end in one of the greatest museum collections, where they are kept nowadays.

Some of the most prominent persons who will be included in our discussion will be Prince of Canino Lucien Bonaparte, Eduard Gerhard (the first secretary of the Istituto di Corrispondenza Archeologica in Rome) and King Willem I of the Netherlands.

8 THE DISPERSED VASES FROM THE BONAPARTE EXCAVATIONS AT VULCI: FROM ARCHIVAL RESEARCH TO THE ANALYSIS OF ARCHAEOLOGICAL CONTEXTS

Abstract author(s): Mazet, Christian (Istituto Nazionale di Studi Etruschi ed Italici)

Abstract format: Oral

The sepulchres of the Etruscan city of Vulci have been known since the end of the 18th century, but were exploited mainly in the first half of the 19th century. A french couple made a profound contribution to the history of the site: Alexandrine and Lucien Bonaparte, owners of the land of Canino on the eastern bank of the Fiora river, intensively excavated the necropolises from 1828 to 1855. They also developed a proper commercial operation that dispersed thousands of archaeological objects, mainly Greek and Etruscan vases, on the antiquities market in Rome, Paris and throughout Europe.

My ongoing research aims to outline the contours of a global study of the archaeological assemblages from these excavations through the combination of information provided by various archival sources and the direct knowledge of artifacts preserved in worldwide museums and collections. In many instances, the reconstruction of their ancient and

modern itineraries (their “social biography”) allows to reconstruct their lost contexts of use and deposition, in dialogue with the most current archaeological issues: here the question of the presence of Greek vases in Etruscan tombs.

This contribution will focus on a few cases that demonstrate the effectiveness but also the impasses of the method, as research on the history of collections of antiquities is intrinsically intertwined with the accuracy of the data provided by the archaeological record.

9 THE DEPOSITION OF ATHENIAN FESTIVAL WARE

Abstract author(s): Smith, Amy (University of Reading) - Volioti, Katerina (University of Roehampton)

Abstract format: Oral

In this paper we expose the methodological problem of selective curation, with a case study of black-figure ceramics produced in Athens from c. 525-400 BCE, and offer a curatorial solution that resonates with contemporary environmental concerns. We interpret these mass-produced and hastily decorated ceramics as ‘festival ware’, that is, small containers produced for Athenian festivals, thus historical records of Athens’ politico-religious culture both within and beyond its borders. Field archaeologists are well aware of late Attic black-figured pots that mass in tombs, sanctuary and residential clearance pits, and other archaeological contexts throughout the Mediterranean, from East to West, but particularly in Athens, where they are also found in workshop deposits. Curators are also aware of such vessels, mostly unprovenanced and often fragmentary, that mass in museum storerooms. Yet, from the outset, museum curators have largely overlooked them for display purposes. When they are displayed, moreover, they are overshadowed by larger pots and rarely showed en masse, as they were in antiquity. Their ambiguous iconography separates them from standardized narratives about myth, history and art. Their fragmentary state and small size, however, encourages their use in educational programmes, including environmental studies.

We chart object itineraries of complete and fragmentary festival ware, drawing parallels between ancient practices of deposition and the stacking of pots and fragments in museum storage. We suggest museum practitioners might employ theoretical advances in post humanism to chart the journeys of Athenian festival ware, placing ceramic objects in the ground to return them to nature. The ground (soil, dirt, dust) resonates with archaeological fieldwork and modern challenges, such as refuse management. Nature is not an ideal(ised) open space but rather a deposit that—like museum storerooms—preserves used and broken artefacts for future study. This inherent natural quality pertains to both ancient and modern audiences.

10 ENRICHING THE ANTIQUARIAN COLLECTIONS OF THE YORKSHIRE MUSEUM: AN ETRUSCAN CINERARY CHEST AS CASE STUDY

Abstract author(s): Carroll, Maureen (University of York)

Abstract format: Oral

The paper reports on a project that is focused on the original archaeological context, significance, and acquisition history of a stone sculpture of a reclining woman from Etruscan Italy in the antiquarian collections of the Yorkshire Museum. The object was recorded in the list of donations to the Yorkshire Philosophical Society in 1883 simply as a purchase made in Italy, without its specific provenance being noted. It has been displayed (erroneously) in the Museum’s Roman York gallery for some time. A research grant from the University of York has enabled both an investigation of comparative material in museums in Tuscany and a petrographic determination of the stone source, allowing us to put this carved lid of a cremation chest back into its primary context in a family tomb of the third century B.C. in Chiusi. Archival research suggests that the object was purchased by a local York architect on a Grand Tour of Italy between 1829-1831. The knowledge gained in this exploration of object narratives sheds light on the background of antiquarian acquisitions in Britain and on the route the Etruscan lady might have taken to her destination in York, benefiting the Museum’s understanding of its holdings and improving the visitor experience through a new and engaging display. Furthermore, the restoration of the sculpture, the analysis of pigments on the sculpture, and 3-D scanning provide exciting new material for digital access.

11 PEOPLE AND MONUMENTS, INTERSECTING LIVES: TWO SARCOPHAGI OF THE ARCHAEOLOGICAL MUSEUM OF THESSALONIKI DURING A CENTURY OF URBAN LIFE

Abstract author(s): Galiniki, Styliana (Archaeological Museum of Thessaloniki)

Abstract format: Oral

Two Attic sarcophagi of Roman times, discovered in 1929 in western Thessaloniki, entered the city’s daily life, upsetting its inhabitants until they were moved for safekeeping and display in the multi-level Foucauldian heterotopia that was then the Archaeological Museum, formerly a place of worship of Islam by the city’s crypto-Jewish community. Over the years, the sarcophagi were used to protect small objects buried during World War II, were re-exhibited in the post-war period, and in 1983 were moved to the city’s new Archaeological Museum and of course were included in

several archaeological studies. After the museum's exhibition renewal in the first decade of the 21st century, they took a prominent place in the museum's outdoor areas. In this way, decades after their discovery, the sarcophagi returned to the urban rhythm, either as scenic elements for the various cultural activities of the museum or as ephemeral stages for the performances of youth groups such as skaters or hip-hop dancers. In addition, these same monuments were projected as performers of the city itself in a theatrical event at the museum, and during the covid-19 virus pandemic as a source of creative inspiration for the museum's online visitors through a digital activity.

Through aspects of the lives of these ancient objects, the relational character of antiquities is explored, as well as their potential to produce and be produced as a Lefebvrian space, constituting social constructions that are redefined by their various uses.

12 GREEK CITY, OTTOMAN EXCAVATION, TURKISH MUSEUM: OBJECT BIOGRAPHY OF A GRAVE ASSEMBLAGE FROM NOTION

Abstract author(s): DiFabio, Christina (Independent Scholar)

Abstract format: Oral

This paper will present the biography of objects from a grave assemblage excavated from the ancient Greek city of Notion, now in modern western Türkiye. The tomb of multiple burials was published in 1912 by Theodore Macridy of the Imperial Ottoman Museum in Istanbul, but with few details. A portion of the assemblage was kept by the Imperial Ottoman Museum and is still in the collection of the now Istanbul Archaeological Museum, but the human cremated remains are lost. I closely studied the objects that were kept, which included gold jewelry, bronze cosmetic equipment, and terracotta figurines. I will present the grave assemblage for the first time, as whole as possible, since its original publication in 1912, and I will analyze the objects' biographies from three points in time: their original deposition in the tomb, their excavation during the Ottoman empire, and their current display and storage in Istanbul. As part of the team that produced new, systematic survey research at Notion, I contextualize the objects as from an elite burial of people who lived during Notion's peak occupation in the Hellenistic to Early Roman periods (3rd century BCE to early 1st century CE). For the tomb's excavation, I show how politics and archaeological practices of the time contributed to what information about the objects is known and what is lost. Lastly, I consider the museum contexts of the objects in present times at the Istanbul Archaeological Museum. I especially focus on two pairs of gold earrings, which are displayed in the galleries as examples of Hellenistic jewelry but are decontextualized from the original tomb. Overall, I demonstrate how studying legacy data in museums can enrich our understanding of not only the objects' biographies, but also of the histories of the places where the objects have been.

13 FROM ANCIENT STONES TO MODERN STREETS: THE PATHS OF PLASTER IMMIGRANTS

Abstract author(s): Anderson, Emily (Johns Hopkins University)

Abstract format: Oral

This paper examines the unique biographies and biographical entanglements that emerge when we approach replicas of ancient objects as distinct sociocultural entities in their own right. Circa 1878, Baltimore, Maryland, a city positioned between the USA North and South, was reeling after the conclusion of the Civil War. Immigration from Europe was bringing massive influxes of people to the port city, which was experiencing booming industrialization. As the city's elite enjoyed the fantastic wealth of the Gilded Age, workers coped with oppressive and discriminatory conditions. In this context, the president of the hugely important Baltimore & Ohio Railroad paid for a collection of plaster casts of classical sculpture to be produced in the museums of Europe; the collection would become the centerpiece of the Art Gallery of the newly established Peabody Institute in Baltimore, founded by George Peabody, the wealthiest American of his time. Over the next two years, the plaster bodies took form in the hands of castmakers from Britain to Italy, Germany to France. From the moment of their formation upon the surfaces of ancient sculptures, these bodies embarked on remarkable modern lives that departed significantly from their stone parents. Through extensive archival research, the plaster casts' journeys can be traced as they boarded ships alongside hundreds of living immigrants in European ports to engage on lengthy Atlantic crossings. Once in Baltimore, close consideration of archival material concerning the casts and their living community reveals the complex parallels and interactions that the plaster bodies had with fellow city residents, beyond the famed names of wealthy funders and founders. We instead consider networks of workers—including other immigrants, the daughter of a railroad laborer's family, and a formerly enslaved person—who shared paths and places with these complex, modern "ancient bodies".

14 ARCHAEOLOGICAL OBJECTS AND POLITICS: THE SITE MUSEUM OF THE ROMAN TOWN OF COSA

Abstract author(s): Sarti, Susanna (Direzione Regionale Musei Toscana)

Abstract format: Oral

Cosa (Ansedonia), a small site in southwestern Tuscany, was a Latin colony founded in 273 BC and was inhabited, albeit intermittently, from Late Antiquity to the Middle Ages.

After the end of the World War II, the American Academy in Rome, which had no excavation tradition in Italy, was allowed to undertake archaeological excavations at Cosa. Thus, in 1948 an American team under the direction of Frank E. Brown (1908-88) began digging, with the permission of the Ministry of Public Instruction of the Republic of Italy and of the owners, Marchese and Marchesa San Felice di Monteforte.

For many years Cosa has been the flagship of American archaeology in Italy and soon the Americans together with the Italian Soprintendenza were faced with the problem of how to preserve such an archaeological site after excavations and rescue operations, and how to contribute to the creation of a dialogue with the territory around. In the 1980s, the Italian State and the American Academy signed an agreement to build a museum to host the numerous and precious archaeological finds. The architect of the project was Roberto Einaudi, the grandson of the former President of Italy, Luigi Einaudi.

Essential to the question of such a site museum was how much information should be made available for display, and how much reconstruction could be carried out. Different countries and different approaches to the past were brought together in Cosa with the aim of presenting the story of a Roman town through the objects discovered on the site.

15 AN EXHIBITION TRIGGERED BY A DIARY. BUILDING A KALEIDOSCOPIC SCENOGRAPHY OF REIFIED MEMORIES

Abstract author(s): Chourmouziadi, Anastasia - Ifantidis, Fotis - Nikolopoulou, Konstantina - Karkazi, Elli - Tourtas, Alexandros - Galani, Eleni (University of the Aegean)

Abstract format: Oral

Material relics of the past are typically considered the backbone of exhibitions about the past. Regardless of any academic discussion regarding their polysemy, fragmentary nature, or numerous interpretations, the aura of authentic objects and their „undeniable“ physical testimony continue to be the focal point of visitors' experiences. Having all that in mind, when we designed an exhibition about the Asia Minor Catastrophe, one of our primary objectives was to discover an alternate method for incorporating material objects into an integrated exhibition narrative. Instead of designing an exhibition around objects and assigning all other media a supporting, interpretative, or explanatory role, we treated material objects as elements of a non-hierarchical narrative toolkit; although the exhibition's narrative included a small collection of heirlooms, they had the same narrative significance as that of sound, video, still image, text, and spatial installations. Even though the first thing that visitors see is an authentic diary kept by a refugee from Asia Minor, the exhibition's plot plays with the materiality and affective power of this iconic object. Similarly, all other objects, carrying rich and diverse biographies, are introduced into a kaleidoscopic scenography, where, with the use of light and sound, they oscillate between being isolated museum entities and ambiguous personal reified memories. Monitoring visitors' behaviour we tried to understand whether we succeeded in both exploiting material objects' power and fighting their fetishist domination. The exhibition was designed and implemented by the Laboratory of Museology of the University of the Aegean, being part of a wider project co-financed by Greece and the EU programme, Digital Transformation of the North Aegean in Culture and Tourism“ [e-Aegean CulTour].

16 IMAGINED BIOGRAPHIES: A COMMUNITY ETHNOGRAPHIC COLLECTION FROM THE VLACH VILLAGE OF SAMARINA IN NORTHERN GREECE

Abstract author(s): Marini, Christina (Australian Archaeological Institute at Athens) - Theodoroudi, Eleftheria (Basketball Museum YMCA Thessaloniki)

Abstract format: Oral

Objects, in the course of their movement across time and space acquire complex itineraries and get entangled with human lives and social processes. They are enmeshed in relational connections that are themselves in a constant state of becoming, and as such the narratives associated with them are products of the particular social, historical or political contexts within which they are (re)constructed.

In this paper we address how factual evidence and inaccuracy are not mutually exclusive when untangling these narratives, especially from the perspective of the collective imaginary. This is particularly the case of objects and assemblages that function as mediators of an imagined sense of identification.

To provide an insight to these matters, we take a look at a small ethnographic collection in the village of Samarina. Samarina is home to one of the most robust Vlach communities of Northern Greece, with centuries old tradition of pastoral transhumance, and an identity treading the fine line between minority politics and the national cultural narrative. The community collection, albeit never systematically documented, has become a point of reference for local conceptualisations of the historical past and its relevance to the present. The itineraries of the objects are at best blurred but mostly creatively enhanced, yet they are no less real in the imaginary of the community.

Where does historic fact end, where do re-invented narratives begin, and how can object biographical approaches embrace and make sense of this ambiguity?

17 **IN-BETWEEN THE SHOVEL AND THE SHELF: CONTEXTUALISING THE CATEGORISATION OF INDUS VALLEY SEALS FROM ARTEFACTS TO ART**

Abstract author(s): Chandra, Swati - Patil, Koumudi (Indian Institute of Technology Kanpur)

Abstract format: Oral

By situating the Indus Valley (IVC) Seals and Sealings in their post-excavation, contemporary environment, this paper examines the trajectory of the IVC seals from an archeological find into the coveted category of art.

Archaeological as well as art historical studies of IVC Seals and Sealings are limited to their lives and their significance in the pre-excavation context of ancient times alone. These studies evade the discussion of how archaeological artefacts change their categories through post-excavation socio-cultural interactions that refurbish meanings and interpretations. This study, in particular, traces the interpretative trajectories and object itineraries formed by the literal and figurative movement of seals visible in colonial exhibitions (1920–1947), the Indian national movement, post-independent India in its formative years of partition, as well as pre- and post-liberalisation, through their records in national and international exhibitions and museums. The itineraries of the seals collected from the National Museum of India, the Calcutta Museum, Site Museums, archaeological records, and textbooks reveal their current membership in the category of art at the intersection of several discourses, including colonialism, nationalism, and the evolving archaeological and art historical scholarship of the twentieth century. Furthermore, the findings suggest that the value of IVC seals was also shaped by preexisting itineraries of discrete archaeological artefacts that had already attained the status of art, such as those from Mesopotamia.

Post-excavation narratives contextualise archaeological artefacts in museums and exhibitions by giving a voice to subaltern and mainstream processes of meaning-making and value acquisition. Such narratives not only decolonise the process of categorisation, but also offer agency to the artefacts.

18 **STONE OF SCONE, STONE OF DESTINY: MOVEMENT, MYTHOPOESIS AND CONTESTATION OR ITINERARIES AS CULTURAL BIOGRAPHY**

Abstract author(s): Hall, Mark (Perth Museum; University of Stirling)

Abstract format: Oral

This contribution will explore the itinerary to movement approach to cultural biography through the case study of the Stone of Scone, also known as the Stone of Destiny. Prosaic of appearance, this sandstone block is politically and culturally integral to total inauguration in Scotland and coronation in England and Britain and has been pivotal in fostering concepts of national identity. This paper will consider both the Stone's mythic and actual journeys, its fragmentation and reproduction and how it illuminates the human trait of attributing agency to material culture. Its mythic travels include identifications Jacob's Pillar and journeying - with Scota daughter of pharaoh - to Scotland via Spain and Ireland. Its actual journeys include from Scone to Westminster (as a trophy of war), its enshrinement in a throne and travelling from Westminster to Edinburgh as an entanglement of 20th century independence politics in the UK. It will embark on further stops on its itinerary in 2023 - to Westminster for the coronation of Charles III and from Westminster to Perth for display in the new Perth Museum.

19 **ACTS OF ART(E)FACTS: THE ÖVERHOGDAL CASE. THE CIRCULATION OF KNOWLEDGE - MUSEUMS COLLECTIONS IN FLUX**

Abstract author(s): Lind, Kerstin (The Society for Textile Archeologi & Culture Studies; Linköping University) - Larsson, Annika - Pallin, Karolina (The Society for Textile Archeologi & Culture Studies; Uppsala University)

Abstract format: Oral

This presentation deals with the biographical movement of four textile objects from northern Sweden, which during history, have been circulating in and out of different contexts. All four weaves depict figural scenery motifs and dates between AD 900 and 1100. Based on the finding place they are called the Överhogdal tapestries, but are exhibited

in Jamtli museum in nearby Östersund. By referring to these tapestries, our aim is to show how collective as well as individual knowledge is being created, shaped and reshaped in time and space, also within different social contexts.

Historical objects and museum collections have always constituted sources for research, but also for new creative ideas in arts and crafts. The Överhogdal tapestries are a magnificent example of how ancient figural contents and expressions have developed through archaeological, historical, and art science perspectives, has been developed. In parallel, the artistic and artisanal expressions have been investigated and transformed into new products and works. The objects also form an important basis for teaching. Different forces, which hardly can be understood as either linear in time or unidirectional, have maintained, blocked, initiated or guided a more circulating movement in the development of knowledge.

The Överhogdal figural hangings consist of four separate weaves with individual motifs, which once and again have been torn out of context to become part of new complex networks of objects, people and institutions. Still, these textiles and their motifs are brought in and out of different disciplinary and trans-disciplinary contexts. We aim in the lecture to present one example that recently was carried out as a case study among teacher students in craft education, at a Swedish University.

This lecture is part of a comprehensive international research project entitled “Acts of Art(e)Facts”. Additional partial studies within the project are presented in session #601 #696, respectively.

20 PRIVATE COLLECTIONS OF ANTIQUITIES IN GREECE: FOR EVERY OBJECT, THERE IS A STORY TO TELL

Abstract author(s): LEKKA, ANNA (Greek Ministry of Culture)

Abstract format: Oral

Private collections of ancient artifacts have a longstanding tradition in Europe. For hundreds of years, the possession of antiquities has been a symbol of power, strength, wealth, education, and national identity. From the 17th to the 19th century romantic travelers returned to Europe bringing back exotic souvenirs from their travels in the Ottoman Middle East. Many Greek antiquities have “traveled” to Europe for the enrichment of collections such as the Caryatid of Eleusis, whose story is very interesting. In Greece, the first private collections have been created during the 19th century. Many of them have constituted the basis for the establishment of public museums, following the donations of some well-known collectors of the period. Greek private collections are also interesting for the way they were assembled. The formation of these collections reveals affecting stories about people and their course around the Mediterranean and gives us a chance to see antiquities from a different perspective.

21 THE MUSEUM OF LIES - THE LAYERED LIVES OF OBJECTS OUT OF CONTEXT?

Abstract author(s): Zinn, Katharina (University of Wales Trinity Saint David)

Abstract format: Oral

The Museum of Lies as subproject to the Cyfarthfa Castle Museum Project collects fictional stories inspired by Egyptological artefacts. It aims to appraise unprovenanced objects by using alternative, creative and artistic narratives (word, image, art, dance) in addition to and beyond scholarly description allowing the literal and cultural (re-)discovery of artifacts completely devoid of their archaeological provenance. In connecting the objects with (new) contexts, they are brought back to life and out of the storerooms by being connected with audiences at the intersection of tangible and intangible heritage.

Artists, poets, craftsmen, dancers and pupils (A-level art, level 9 English) are creating said narratives which are revealed together with the objects and their academic descriptions in annual pop-up exhibitions. Fitting with the cyclical (re-)use of objects in ancient Egypt, this traces their trail through time and space from the moment of first production and consequent usage in Egypt over being picked up by travellers, being misplaced and rediscovered in Wales. At every stage a layer of new context and interpretation was added, revealing their identity giving multidimensionality.

Creative narratives function as simultaneous cultural representations highlighting the EXTRAordinary within such neglected objects. The inherent emotional power and imagination allows to capture a potential which otherwise cannot be detected. This helps to communicate them to the wider public and research community alike, creating several identities and complex relational connections: locally at Merthyr Tydfil in rural Wales, students of UWTSU involved in primary research, local school children using the objects in their curriculum, the community around Lampeter, researchers (Egyptologists, anthropologists, heritage professionals) and more. The focus on different audiences captures the temporality of social agency and changing identities.

This framework challenges the troubled relationship museums can have with truth, authenticity and “the real thing” and contribute to the discourse around museums are not neutral.

OBJECT BIOGRAPHIES AND DIARY FILM: A CREATIVE EXPERIMENT EXPLORING THE SPACE BETWEEN ARCHAEOLOGY AND MOVING IMAGE STRATEGIES

Abstract author(s): Kapsali, Konstanza (LUCA School of Arts)

Abstract format: Oral

Seven objects, dating between the 3d – 4th century AD and the 2010s, become the springboard for a quasi – diaristic story, navigating through a young woman’s childhood and early adulthood memories, but also exploring stories inherited to her by two generations of men in her family. The stories cover a time from, approximately 1952, through the 70s, and until 2021.

In this first-person cinematic attempt, the story is unravelled in an episodic fashion. Each object unlocks a series of free subconscious associations, related to past events in the artist’s life, family memories and historical facts, blurring the line between the seemingly insignificant manifestations of the everyday and that which becomes history.

By questioning the symbolic value attributed to objects of archaeological interest, this work seeks to entertain the idea of self-excavation, as a proposal for the dissemination of scientific ideas on materiality and culture, to the wider public. How familiar are we allowed to be with a museum exhibit?

Synergies between art and archaeology are a long-standing tradition. In the case presenting here, the authorial presence and voice- over narration, which often reflect on conceptions of history and archaeology, in a personal, informal manner, attempts to supplement any pretence of objectivity, with absurdity , nostalgia and humour, to produce a critically self- conscious work of art.

Finally, the associative editing of images and sounds, refers to the fleeting nature of memory, avoiding a linear biographical approach to it, to distance the artefacts from their fixed chronological narrative and from their original contexts, and refamiliarize them to the public, next to other, contemporary artefacts, similarly decontextualised, and other stories of mobility.

NEW INSIGHTS INTO AGRICULTURAL PRACTICES AND THEIR ENVIRONMENTAL CONDITIONS. THE CONTRIBUTION OF ARCHAEOOMETRY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Ben Makhad, Sammy (Muséum national d’Histoire naturelle, Paris) - Gavériaux, Fanny (Independent researcher)

Session format: Regular session

Past-agriculture is widely studied, not only because it can represent an inspiration for our current agriculture, but also because it is a precious source of information about past societies. This session focuses more precisely on plant production, which was, for a long time, understudied due to a lack of evidence. Yet, the domestication, production, exploitation and diffusion of plants and crops were at the basis of numerous socio-economic transformations on different scales. Most of the information known about former crop production is based on literary sources (when available), traditional archaeobotanical or artefact studies. Nonetheless, they still give an incomplete picture of the farmers’ techniques and their environmental setting. The complex entanglement existing between these different aspects remains also challenging to assess.

The last two decades have seen the development of new methodological approaches to archaeological soils and/or archaeobotanical remains to address these issues. For instance, new protocols, including biogeochemical analyses on different proxies, weed ecology or soil micromorphology can help assess various farming techniques (such as tillage, manuring, irrigation, marling) or environmental conditions (such as water status, soil types).

In this session, we want to bring together scholars from different backgrounds to discuss innovative methods for the reconstruction of field environment, ecology, land use, and farming practices, across time and space. Multidisciplinary research dealing with relationships between livestock, draught animals, and crop production, as well as studies offering experimental protocols developed in modern field experiments which could be applied to the archaeological record, are also welcome.

1 THE FERTILIZATION OF FIELDS IN GAUL (500 BCE - 500 CE), APPROACHED BY THE BIOGEOCHEMISTRY OF CEREAL REMAINS

Abstract author(s): Ben Makhad, Sammy - Fiorillo, Denis (Muséum national d'Histoire naturelle, Paris) - Malrain, François (Institut National de Recherches en Archéologie Préventive) - Aguilera, Mònica (Department of Crop and Forest Sciences, Universitat de Lleida) - Matteredne, Véronique - Balasse, Marie (Muséum national d'Histoire naturelle, Paris)

Abstract format: Oral

The dynamic demography and economy of Gallic societies in the Second Iron Age and the Roman period is based on the efficiency of the agricultural system. One of the parameters that increased the potential of crops, and which was studied in a recently defended thesis, was the management of soil fertility. Archaeologists have often dealt with this issue from disparate sources (Latin agronomists, stall and latrine studies, off-site furniture, weed ecology), but which often only attest to the capacity to produce manure. Recent methodological developments in biogeochemistry applied to archaeobotany have made it possible to renew our knowledge of a territory that has been little studied.

These isotope analyses ($\delta^{15}\text{N}$), applied to cereal remains from 68 archaeological sites, have shown that the use of manure was widespread throughout the northern half of France throughout the Second Iron Age and the Roman period. In some areas, it was shown that farmers used less fertiliser, probably due to geological constraints limiting agriculture. A second contribution of this study was to highlight the specific treatment of certain cereal species, in particular bare wheat, which benefited from fertilisation in a greater number of cases.

2 AGRICULTURAL PRACTICES AND ARCHAEO-BIOLOGICAL DATA IN MIDDLE AGES CONTEXTS: A CASE STUDY FROM THE NORTH WEST OF THE IBERIAN PENINSULA

Abstract author(s): Garcia, Victor - Fernández, Jesus (University of Oviedo) - Martin, María (Universidad de Cantabria) - Moshenka, Gabriel (University College London)

Abstract format: Oral

Environmental archaeological studies are commonly incorporated into archaeological projects and reports: however, this practice is not consistent throughout Europe. For example, archaeological data on medieval agricultural practices in the north of the Iberian Peninsula remain scarce. In this area relatively few excavations have systematically sampled and studied botanical and zoological remains, and even fewer have integrated these findings together with other environmental and geographical factors to interpret medieval agricultural landscapes. In this paper we present the bioarchaeological findings of excavations carried out between 2015 and 2022 in and around the medieval village of San Romano, in Asturias, Spain. The site dates to between the thirteenth and fourteenth centuries. We will examine the organic remains using quantitative and qualitative methods, together with environmental and geographical data, to ascertain the past agricultural processes. The materials from San Romano provide data on livestock management: a greater representation of suids (*Sus* sp.) compared to other farm animals, a near-total absence of game animals, and groups such as equids or canids. Within the archaeobotanical data we highlight, within the cultivated or collected groups, both dressed wheat and nut shells such as hazelnut (*Corilus avellana*) and walnut (*Juglans Regia*). Charcoal analysis demonstrates a diversified and complex woody resources exploitation combining firewood obtained from mixed oak forests with temperate plants, as well as riverine and scrubland species. Firewood was obtained in the valley but also in the highest elevations of the surrounding mountain areas. This environmental information is fundamental for a correct interpretation of the peasant settlements of the high and late medieval period.

3 PAST AND PRESENT WEED VEGETATION AT LJUBLJANSKO BARJE AREA, SLOVENIA: PRELIMINARY RESULTS

Abstract author(s): Skrt Kristan, Taja (Institute of Archaeology ZRC SAZU) - Tolar, Tjaša (Institute of Archaeology ZRC SAZU) - Küzmič, Filip (Jovan Hadži Institute of Biology ZRC SAZU)

Abstract format: Oral

Ljubljansko barje area in Slovenia is well known Late Neolithic to Early Bronze Age archaeological wetland site, where more than 40 pile-dwelling settlements have been discovered. Besides the remains of cultivated and intentionally gathered plants, seeds/fruits of other plant taxa from the surrounding area can also be recovered. Weeds are important, but usually get less attention. The variety of weed species that occur in fields depends, among other factors, on the crop and field management. The presence or absence of certain species can also give us, beside the information about environmental conditions and agricultural practices (such as tillage, manuring, sowing and harvesting time and methods, etc.) the information about intensification of agriculture. We aim to apply a multi-faceted approach to

study past and present weed vegetation of the Ljubljansko barje, including (i) soil seed bank analysis, (ii) recording standing weed vegetation, (iii) utilizing an existing vegetation plot database, and (iv) compiling archaeological records of herb species from the 4th mill. BC Slovenian pile-dwellings. We will compare results from botanical studies (i-ii) performed at modern organic cereal and flax fields with the currently available historical and archaeobotanical records (iii-iv). First results show that certain taxa are detected in both recent and archaeological sediment samples, such as species from genera *Chenopodium*, *Rumex*, *Trifolium*, and *Stellaria*, while others are totally absent or present only with individual specimens. With further research we will try to elucidate species' roles as either weed, ruderal, unintentionally introduced or even cultivated species in the present and past.

4 SOIL SEED BANK AND ARCHAEOBOTANY: STUDYING THE PAST LANDSCAPE AND HUMAN ACTIVITIES DISTURBANCE THROUGH THE SEEDS

Abstract author(s): Stella, Matilde - Grasso, Anna - Fiorentino, Girolamo (Laboratory of Archaeobotany and Palaeoecology, University of Salento)

Abstract format: Oral

Seeds surviving at the most superficial layer of the soil form the soil seed bank. The soil seed bank is a precious tool for biodiversity conservation, plant identification and crop renovation. Thus, the study of soil seeds bank process distribution provides important information about weed control, crop seasonality, farming strategies and soil-forming processes.

Studying the modern soil distribution processes of seed helps to understand which seed characteristics influence the movement, the penetration and the deposition of seeds in the soil. Previous studies have shown that seeds penetrate the ground very slowly and demonstrated that seeds are conditioned by their shape and the relationship between surface and their volume.

In this work, we survey the soil seed bank of a modern wheat field in South-East Sicily (Italy), through phytosociological, ecological, biometric and morphological analysis. Specifically, we focus on vegetation and anthropogenic disturbance activities to analyse past agriculture systems and human–environment interactions.

5 WHAT'S IN A SHAPE? 3D SHAPE ANALYSIS OF PHYTOLITHS AS A TOOL TO REFINE BOTANICAL ATTRIBUTION OF CEREAL PHYTOLITHS

Abstract author(s): Hermans, Rosalie (Department of Chemistry, Research Unit: Analytical, Environmental and Geo-Chemistry, Vrije Universiteit Brussel, AMGC-WE-VUB; Department of Art Sciences and Archaeology, Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel, MARI) - Chevalier, Alexandre (Royal Belgian Institute of Natural Sciences, Quaternary Environments and Humans) - Strömberg, Caroline (Department of Biology, Burke Museum of Natural History & Culture, University of Washington) - Nys, Karin (Department of Art Sciences and Archaeology, Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel, MARI) - Snoeck, Christophe (Department of Chemistry, Research Unit: Analytical, Environmental and Geo-Chemistry, Vrije Universiteit Brussel, AMGC-WE-VUB; Department of Art Sciences and Archaeology, Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel, MARI) - Devos, Yannick - Vrydaghs, Luc (Department of Art Sciences and Archaeology, Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel, MARI)

Abstract format: Oral

Phytoliths, opaline silica bodies in plants, are used to identify the remains of wild and domesticated plant species in archaeological contexts. In combination with geoarchaeology, phytolith analysis enables to shed light on local crop cultivation. The grass family (Poaceae), including cereals, is known to produce high amounts of phytoliths often taxonomically diagnostic, making phytoliths an excellent proxy to study cereal cultivation. Particular phytolith morphotypes, called ELONGATE DENTATE and ELONGATE DENDRITIC, are produced in the inflorescence bracts of many cereal species.

The current work builds on the research of Gallaher et al. (2020) by investigating ELONGATE DENTATE and ELONGATE DENDRITIC phytoliths from modern cereal species within the Triticeae and Aveneae and some wild grasses using confocal microscopy. The latter enables the production of 3D phytolith models, followed by 3D shape analysis (3D geometric morphometrics). With this 3D analysis, we hope to get a more in-depth understanding of these morphotypes, and consequently refine botanical attribution of wheat, rye, spelt, and barley phytoliths in archaeological contexts to better understand food production.

Reference

- Gallaher, T.J., S.Z. Akbar, P.C. Klahs, C.R. Marvet, A.M. Senske, L.G. Clark, and C.A.E. Strömberg. 2020. 3D shape analysis of grass silica short cell phytoliths: a new method for fossil classification and analysis of shape evolution. *New Phytologist*, 228:376–392.

PASTURES ON THE EDGE: MARGINAL LANDSCAPES AND ALTERNATIVE SOCIAL FORMS

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Houghton, Mark (Aarhus University) - Costello, Eugene (University College Cork; Stockholm University) - Løvschal, Mette (Aarhus University; Moesgaard Museum)

Session format: Regular session

Many of our most evocative landscapes – heathlands, bogs, forests, high mountains – have been productive and lived environments throughout human history. Nevertheless, they sit in strange relation to much archaeological work, liable to come into focus as the site of exceptional finds, bodies frozen in pack ice or preserved in bog for instance. While these spectacular finds might grab our attention, they do not break the overriding sense that these were ‘marginal’ landscapes, visited for special purposes on unusual occasions. Given their marginality to modern, productivity-focused worlds, it is easy to forget the centrality such landscapes held to past communities and the particular forms of social organisation and tenure which they called into being, notably commons and shared grazing rights. Understanding land as held-in-common is, for example, a complex and actively heterarchical, even anarchic, way of managing resources. Yet, these landscapes are still underestimated as sources of insight on economic and social life, as if we assume their marginality today must reflect some unchanging essence of the landscape itself.

In this session, we want to re-people and re-animate these ‘marginal’ areas. How can we understand the effect of these landscapes on their inhabitants, and the inventive and productive relationships that people forge with one another in order to use and live in these places? We seek papers that explore social organisation in marginal and pastoral landscapes around Europe, in both the recent and distant past. We particularly welcome papers that discuss entanglements of people, plants, animals and topography, so as to get a fuller understanding of the factors influencing social organisation and landholding. How did ‘marginal’ landscapes afford opportunities for particular social forms, and what factors led to the disruption, reconfiguration or persistence of these regimes over time?

ABSTRACTS

1 COUNTING SHEEP: NEW INSIGHTS INTO HERBIVORE DYNAMICS IN ATLANTIC HEATHLANDS

Abstract author(s): Davies, Althea (University of St Andrews)

Abstract format: Oral

Across Europe, heaths and moors have become a focus for restoration and rewilding which raises challenging questions about how well we actually understand the role of grazers and pastoralism in generating and maintaining internationally significant Atlantic heathlands. Herbivores are part of archaeological narratives in UK upland landscapes from the Mesolithic onwards, but we currently have a limited understanding of how animal abundance has changed over time since soils are too acidic for bone preservation and shepherding systems leave a limited archaeological footprint. Spores from dung fungi are increasingly used in palaeoecology as a proxy for large herbivores. However, promising statements about the value of dung fungi as quantitative indicators of herbivore biomass have until recently not been tested in heathlands. This study outlines recent methodological advances using fungal spores, pollen and biomarkers to explore changing pastoral regimes during the “Agricultural Improvements” of the last 200 years. The findings emphasise strikingly different narratives of social and ecological change, in a period people were displaced in favour of sheep. Applying this multiproxy approach to other heathland landscapes has the potential to bring into sharper focus just how central these hinterlands were as engines for socio-economic change.

2 PREHISTORIC LANDSCAPE OF LUENEBURG HEATH

Abstract author(s): Menne, Julia (Lower Saxony State Office for Cultural Heritage; Gerda Henkel Stiftung) - Behling, Hermann - Krug, Johanna - Fabian, Estella (University of Göttingen, Department of Palynology and Climate Dynamics)

Abstract format: Oral

The Lueneburg Heath is one of the best known heath areas in northern Germany. It is a cultural landscape that man has cultivated for thousands of years. Agricultural land alternates with woodland, which was intensively managed by pastoral farming. Due to the sandy soils, it was a barren and sparsely populated land for a long time. The transformation continued in modern times, which led to a complex shaping of the landscape.

This contribution considers the archaeological site ‘Oldendorfer Totenstatt’ and the surrounding areas in the heathland. On this necropolis, graves were built in a very confined space from the Neolithic to the pre-Roman Iron Age. The area has been continuously used as ritual place and was steadily expanded by burials. The continuity of this kind and intensity is unique in northern Germany.

During the Neolithic, the site was part of a network of trade and mobility, whose finds bear witness to far-reaching contacts. The project investigates the connection between the construction of Neolithic monumental architecture up to the use of the site to the present-day and the changes in the landscape caused by man.

Today, the vegetation on the site is heathland with adjacent pine-rich mixed forest and alder swamp forest. Recent palynological analyses show how manifold the landscape has been formed. A change in cultivation is recognisable over the entire period of use, which made it possible to reconstruct the landscape around the site.

3 **HISTORY OR ARCHAEOLOGY? RECONSTRUCTING UPLAND COMMONING AND HERDING IN NORTH-WEST EUROPE, C.1300-1800**

Abstract author(s): Costello, Eugene (University College Cork; Stockholm University)

Abstract format: Oral

For the late medieval and post-medieval periods, a lot of research has been undertaken by historians on the social organisation and work patterns of rural communities. Most of this research has focused on lowland areas where cereal growing was dominant, and the majority also underestimates the landscape itself as a factor in the development of different social practices. There is also arguably a bias towards the study of elites. Nevertheless, it is a very significant body of work for archaeologists of the recent past to reckon with and one which we still have to come to terms with.

In this paper I focus on the gaps and overlaps between social history and landscape archaeology. To do this I look at so-called 'marginal' rural communities in western Ireland, Highland Scotland and north-central Sweden, from roughly 1300 to 1800 AD. These were communities that depended on distinctive forms of social organisation, particularly the common holding of upland pastures and the gendered herding of livestock. However, there is uncertainty about the specifics of these practices because of the nature of the evidence and the methodological gap between historians and archaeologists. This neglect is a shame as we know from other contexts that there can be a lot of complexity in both common property regimes and rural work practices. Using different sources and examples, I discuss when gendered herding may have emerged in mountain and forest areas of north-west Europe and consider different potential forms of negotiation within these commons over time.

4 **'ONCE OUR HILLSIDES WERE RINGING': RE-POPULATING THE UPLAND LANDSCAPES OF GLENCOE IN THE SCOTTISH HIGHLANDS IN THE EARLY MODERN PERIOD**

Abstract author(s): Stewart, Edward (University of Glasgow)

Abstract format: Oral

Popular narratives towards the Scottish Highland landscape often position the uplands as an enduring wilderness or wasteland prime for rewilding. The assumption of the marginality of the upland shieling landscape, as an empty, liminal and unproductive space, and the assumed centrality of the valleys and straths as areas of permanent settlement and cultivation ignores the social complexity and diversity of practices occurring within these landscapes. Recent research into Gleann Leac-na-Muidhe, Glencoe, in the post-medieval has attempted to explore one such landscape in relation to its complex seasonalities and the busyness produced by networks of practices throughout the year. This is with the aim of producing narratives which repopulate these supposedly empty landscapes and challenge notions of 'marginality' and 'centrality'.

Alongside considering the productivity of these often assumed to be unproductive and marginal landscapes this paper will also explore the various ways communities and local elites set out to control and manage their upland resources, through various forms of occupation of 'marginal' land. As part of this the expression of control by local and regional elites over these uplands will be interrogated to consider the social complexities of the upland communities created through these relationships, based on recent investigations of a shieling cluster and chiefly summer settlement in Glencoe.

From this point the trajectories of this landscape over the course of the early modern period will be considered charting the impacts of periods of unrest, improvement and clearance which rendered many such landscapes into so-called 'emptied lands'. The new forms of social organisations and land management which evolved from this transition to hill sheep farms and sporting estates will be explored to recognise the shifting busyness of the uplands through this period which continues to shape how these landscapes are used and understood today.

5 ANCESTRAL COMMONS: EXPLORING THE CENTRALITY OF 'MARGINAL' HEATHLANDS TO THE NORDIC BRONZE AGE WORLD

Abstract author(s): Løvschal, Mette - Houghton, Mark (Aarhus University)

Abstract format: Oral

The heathlands of northern Europe are easily overlooked in archaeological narratives of prehistory. This is a product of their marginality in recent centuries and the language of progress and industrialization that accompanied their conversion to agricultural land in the nineteenth century. It is surprising, then, to learn that inland heaths were deliberately expanded and carefully managed for millennia across northern Europe. This fact suggests radically different understandings of heathland, their affordances and centrality to the structures of life. In this paper, we focus on a large area of prehistoric anthropogenic heathland in western Denmark and investigate how reframing it as central to prehistoric life encourages new understandings of cosmology, social organization and landscape governance to emerge. We suggest that the expansion and management of this landscape form was rooted in a form of ancestral commons, in which life and death were entangled in the renewal of landscape and the burial of the dead. These ancestral commons formed a backbone for further developments across southern Scandinavia, becoming instrumental to Bronze Age travel and social organization, enabling different social groups to coalesce and reconfigure in a manner which was vital to the functioning of the Nordic Bronze Age world.

6 PASTORAL WEALTH IN MARGINAL LANDSCAPES

Abstract author(s): Sand-Eriksen, Anette (University of Oslo; Museum of Cultural History) - Løvschal, Mette (Aarhus University; Moesgaard Museum)

Abstract format: Oral

The concept of marginality gives immediate association to peripheral or isolated landscapes. And indeed, physical marginality has often been connected to social and economic marginality. However, with this paper we approach marginal landscapes more openly, exploring how marginal landscapes in late 3rd-2nd millennium BC southeast Norway were spatially, economically, and socially integrated through practises of pastoralism.

Consider the mountains and wide-stretching woodlands of southeast Norway – plentiful of marginal, wet and dry grazing landscapes with highly seasonally dependent resources. Rich archaeological evidence, such as pit fall traps and lithic debitage, reveal how people traversed and exploited such landscapes for hunting, fishing, and trapping throughout prehistory. Curiously, however, we know very little about how pastoral communities in the region operated in and governed these marginal areas, not least in relation to so-called 'core' areas. This is particularly striking since recent settlement archaeological research suggests that this region was oriented towards pastoralism in contrast to cereal-based agriculture. If this is indeed the case, it suggests that we need to approach the archaeological material substantially different.

In this paper, we take a deeper look into an often-overlooked category of sites, what we call off-sites, aiming to identify seasonal gatherings and pastoral activities in upland and inland areas in southeast Norway. By investigating factors of physical and biological character at these locations, e.g., water points, movement corridors, and distinct landmarks, we aim to bring forth new knowledge of this highly overlooked way of living in and with marginal landscapes.

7 ECONOMIC AND SOCIAL DYNAMICS OF CENTRAL CRETAN MOUNTAINOUS BORDERLANDS IN THE FIRST MILLENNIUM BC

Abstract author(s): Drillat, Quentin (Ghent University)

Abstract format: Oral

In the modern Heraklion prefecture, central Crete, Greece, multiple city-states emerged and evolved during the first millennium BC within an area bounded by mountains: the Psiloritis to the West, the Lasithi to the East, and the Asterousia to the South. This highly compartmentalized landscape, split between multiple city-states, was, as a result, composed of many borderlands, areas at the frame of each independent territory. This paper aims to study these borderlands with a special focus on economic and social practices in relation to geo-environmental constraints. Since these marginal areas provided city-states with specific ecosystems interesting for specific activities such as pastoralism, their control and access were crucial for the economic sovereignty of polities. This paper will apply spatial analyses and modeling technics to define and characterize border zones, their access and their use. First, Least-Cost Site Catchment analysis enables to model city-states' border lines. Around them, border zones will be characterized based on terrain analysis and paleoenvironmental data, to estimate their agricultural and economic potential. These marginal landscapes will then be re-humanized by analyzing the accessibility of these zones from city centers with cost-based analyses. Finally, settlement patterns will be explored as a proxy of the social organization in borderlands. Combined with historical documents that describe borders and mention shared grazing rights among some city-states, this study

will emphasize the importance of borderlands that were not only marginal areas but also zones of economic activities and places of both social opposition and cooperation.

8 CHANGES IN THE MEANINGS OF 'PASTURELAND' AND 'PASTORAL COMMUNITIES' IN HUNGARY SINCE THE 19TH CENTURY

Abstract author(s): Varga, Anna (Environmental Humanities Research Group, Department of European Ethnology - Cultural Anthropology, University of Pécs)

Abstract format: Oral

Pastoralism is one of the millennia-old subsistence activities and tradition that is widespread worldwide and has a strong influence on the way of life of the people who practise it. It is therefore important to identify not only the practices that remain constant, but also the changes that can help us to understand the different narratives and to uncover the marginal details.

My questions: how have pasturelands and pastoral communities changed from the pre-enclosure period of the early 19th century to the present day, and what role did the enclosures of the second half of the 19th century play in this process? To achieve this, I investigated case studies in Hungary using ethnohistorical and environmental-historical methods.

The most important goal of shepherds is to raise healthy, reproductive livestock. In order to avoid negative effects caused by short or long-term environmental changes, it is best for them to have access to as many different types of habitats as possible. One of the reasons for the pastureland crisis that followed the introduction of enclosure was the significant reduction in the extent of pastureland and the reduced number of grazed habitat types. Nevertheless, the view that pastureland is not made up of only one habitat type is still present in the thinking and practice of contemporary pastoralists. The phrases 'the pastor is dying with the pasture' and 'the pot of the herder is already broken' were expressed by a herder in the mid-20th century, which illustrate the trends towards the transformation of pastoral communities. After the enclosure, professional shepherds became more widespread, while today, the electric fence is increasingly taking over the role of guarding livestock. But the direct link between the herders and the livestock and the need for close relationship with nature in nature-based farming can be seen as eternal.

9 SILK ROAD SYNOECISM AND STATE-FORMATION ON THE EDGE OF THE KAZAKH STEPPE

Abstract author(s): Goffriller, Martin (Xi'an Jiaotong Liverpool University)

Abstract format: Oral

The Dzhetyasar Culture of Kazakhstan, located within the Syr Darya delta near the eastern littoral of the former Aral Sea, presents significant potential for a range of hypotheses on the emergence of settlement practices among pastoralist groups. As one of the great unknowns of Central Asian archaeology, located on the edge of the steppes and the settled world, the people of the Dzhetyasar Culture and their many dozen complex settlements, have so far eluded any form of ethnonymic attribution. The same had to be said of the culture's historical extent, which was very loosely located between the 3rd and 1st centuries BCE until approximately the 6th-8th centuries CE.

Recent results from an extensive core-sampling campaign and a consequently updated chronology of the culture, offer a clearer view of the early stages of development of a number of representative sites, as well as a better understanding of processes whereby smaller segmentary settlements coalesced into larger, proto-urban centers. Additionally, questions regarding the formation of an early Dzhetyasar state can now be more clearly related to the precise historical context within which it operated, while also presenting a clearer picture for the reasons of the abandonment of the cultures' settlements and its eventual overall disappearance.

502 CORING IS NOT BORING! DRILLINGS IN COMBINATION WITH OTHER NON OR MINIMAL-INVASIVE METHODS FOR INVESTIGATING ARCHAEOLOGICAL MONUMENTS [COMFORT]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Ibsen, Timo (Centre for Baltic and Scandinavian Archaeology - ZBSA) - Črešnar, Matija (Department of Archaeology, Faculty of Arts, University of Ljubljana - UL FA DA; Centre for Interdisciplinary Research in Archaeology - CIRA)

Session format: Regular session

This session is dedicated to multi-method approaches in archaeological investigations, that involve the use of drilling. Especially monuments like fortifications with their often enormous rampart-and-ditch systems, terraces, slopes and thick occupation layers full of archaeological and biological relicts, but also burial mounds or settlement tells, offer the

perfect playground for hand augering and mechanical coring. Quick and cheap, drillings serve as an endoscope into the past of such monuments. Drillings in modern times have become an omnipresent, but not en-vogue tool on excavations to verify geophysical results, to distinguish occupation phases, and to answer palaeo-environmental questions. Yet systematic coring strategies are lacking standards.

The often multi-layered cores may contain soil material and hence information about the entire life span of the monuments. They are used for dating hillforts and other monuments by radiocarbon analysis or micromorphological studies of the soil and the relicts it contains, which provide information about the age and function of the site and its parts. Combined with (p)XRF measurements or pollen and phytolith analysis they add information about the environment and the human impact; susceptibility measurements and other geophysical methods help to understand the geomagnetic images or ERT and GPR data. Hence there is a bouquet of methods, which can be applied to drilling cores themselves to make them speak about the history of the site.

We invite archaeologists, soil scientists, geologists, and those from related disciplines to present their method and strategy of drillings used for investigating fortifications, burial mounds or settlement tells with massive earthen elements. Reports about technical challenges, problems, limitations or successful new ideas are welcome, as are presentations on best practice examples of different methods combined with drillings and especially the results we can gain from systematic interdisciplinary coring strategies.

ABSTRACTS

1 CORING EXPERIENCES FROM BALKAN PREHISTORY

Abstract author(s): Penezic, Kristina (Biosense institute, University of Novi Sad)

Abstract format: Oral

For over a decade, coring and augering at numerous prehistoric (Mesolithic to Bronze Age) sites in the central Balkan area have provided insightful information on site size, formation processes, paleo-topography, and small- or large-scale prehistoric earthworks. Samples taken from off-site cores have been used for landscape reconstruction, while samples originating from sites have provided valuable information on environmental proxies (e.g. by analysing biomarkers originating both from archaeological layers and different soils and sediments). Neolithic tell-site Vinča - Belo Brdo has been one of the numerous playgrounds for the application and development of coring techniques. In this presentation, a short history of development of augering methodology will be presented, from first baby steps over a decade ago, to full-scale field campaigns focused on specific research questions. Several other examples from Neolithic, Eneolithic, Bronze Age or multi-layered sites will be presented, focusing on a wide application of hand augering and quick, cheap, and reliable results that were obtained by applying this method.

2 A KEYHOLE TO THE NEOLITHIC: A COMPARISON OF CORING STRATEGIES AT TWO SITES IN THE CARPATHIAN BASIN

Abstract author(s): Kühl, Till - Wilkes, Fynn - Skorna, Henry (Christian-Albrechts-Universität zu Kiel; Cluster of Excellence ROOTS)

Abstract format: Oral

The Carpathian Basin is a hot spot for settlement activities since prehistoric times and offers a wide range of possible method application for archaeological, geophysical and geomorphological survey in different regions. Coring has been used in the contexts presented, in combination with geomagnetic measurements and field walking, to get an impression about settlement layouts, feature preservation, dating and the layering of the features appearing in the geomagnetic survey.

In Slovakia a large rondel from the late neolithic was discovered via a geomagnetic survey near the village of Podhájska in 2022. A combined coring and excavation campaign took place there in summer of 2022. Here, corings were used specifically to investigate several settlement pits, that were scattered across the terrain. The purpose was to gather datable material and to investigate the pit layouts and stratigraphical sequences.

The exploration of the site in Serbia, near the village of Opovo, was different. Geomagnetic investigations and field walkings revealed a late neolithic settlement, that had been partially known already by earlier surveys and even excavations in the 1980s. However, a geomagnetic survey in spring 2022 showed, that the settlement was much larger than anticipated by the former researchers. The settlement appeared to be far-reaching, with a ditch system and several burned houses. Based on this results, the aim of the coring activities at Opovo, was to extend and reevaluate the knowledge of the site by verifying the stratigraphy of multiple features and dating parts of the settlement.

We aim to show that even though a relatively similar combination of survey methods was applied, the research focus strategies differed massively. Whereas coring in Slovakia was used as an explorative method for the gathering of new

information, it was used as a precise sondage tool in Serbia for very specific contexts, in an already researched environment.

3 CORING HALLSTATT

Abstract author(s): Reschreiter, Hans - Kowarik, Kerstin (Natural History Museum Vienna)

Abstract format: Oral

Salt has been produced in Hallstatt for 7000 years. This long history of production has given rise to a specialized landscape in which all aspects of life were attuned to salt. This was one of the decisive reasons for the designation as a UNESCO World Heritage Site.

One of the aims of the research carried out by the NHM Vienna and its cooperation partners is to record the prehistoric and imperial mines in their spatial and temporal dimensions, to characterise the impact of mining activity on the surrounding landscape and to reconstruct the human-environment relationship over millennia. Moreover, prehistoric mining activity was interrupted several times by huge landslides. An understanding of these events is necessary to reconstruct the development of this industrial landscape.

An essential tool for achieving these goals is the sampling - coring - of various archives. Coring is used to reconstruct the impact of mining activity on the ecosystem, to record the size of the mining chambers and the dynamics of the landslide events that repeatedly interrupted mining.

In addition to sampling environmental archives, exploratory drilling in the mine is currently the focus of research. This goes beyond anything previously known in archaeological research. With professional mining equipment, core drillings of dozens of metres in length are carried out in a fan shape to record the size, direction and also the filling of the excavation chambers. In order to explore the landslide masses in the Salzberg valley, it was necessary to drill a core borehole more than 40 metres deep. The environmental history of Hallstatt, on the other hand, can be reconstructed by means of sediment cores from lake deposits and from bogs, some of which are over 50 metres deep.

4 HOW TO APPROACH THE IRON AGE URBAN SPACE - A MINIMAL-INTRUSIVE SURVEY OF OPPIDUM ZÁVIST, CENTRAL BOHEMIA (CZ)

Abstract author(s): Bursak, Daniel (Institute of Archaeology of the CAS, Prague) - Kothieringer, Katja (Informationsverarbeitung in der Geoarchäologie, Otto-Friedrich-Universität Bamberg) - Sonnemann, Till (Bonn Center for Digital Humanities, University of Bonn) - Danielisová, Alžběta - Křivánek, Roman - Kyselý, René - Daněček, David - Kertés, Samuel (Institute of Archaeology of the CAS, Prague)

Abstract format: Oral

Oppidum Závist is one of the longest-settled hilltop sites in Bohemia and a unique example of urban space in Iron Age Central Europe. Despite intensive archaeological investigations from the 1960s to the 1990s, most of the settlement area remained unexplored, as research focused largely on the most prominent structures. Our research questions focus on the use of space through time, population density dynamics, and economic activities. We address the challenges associated with a site of intensive prehistorical occupation studied through a comprehensive surveying methodology: geochemical analysis and radiocarbon dating of charcoal collected from soil coring, complemented by geophysical surveys and spatial analysis of artefacts obtained from metal detector surveys.

Previously conducted large-scale magnetic surveys revealed settlement activity, particularly in the bailey at the foot of the slope, just outside the fifth of six defensive walls, showing pits and linear structures. GPR added a structural analysis and depth component to the magnetic data. A massive support structure appears to prop up the second extensive man-made platform called Balda to the west of the acropolis. The main task of geochemical research is to differentiate the surveyed locations by their function. The geochemical footprint of many pre-Iron Age periods is however distorted by the extensive changes in inhabited space during the 1st millennium BC. Soil investigations and new dating revealed sediment sequences that reflect different phases of use in the Early Medieval period and the Early La Tène period. The latter also contains older charcoal, evidencing fire activities in the Late Bronze Age. Whether the medieval overprint is related to agricultural activities on these terrace-like slopes remains to be seen in further studies by micromorphology, biomarker and XRF analysis. Results from the metal detector survey indicate an important change in the character of settlement during the Iron Age.

5 MULTI-METHOD INVESTIGATIONS (INCLUDING CORING) OF EARLY IRON AGE SITES BETWEEN THE ALPS AND THE DANUBE

Abstract author(s): Crešnar, Matija - Mušič, Branko (University of Ljubljana, Faculty of Arts, Center for Interdisciplinary Research in Archaeology) - Czajlik, Zoltán (Institute of Archaeological Sciences, Faculty of Humanities, Eötvös Loránd University) - Horn, Barbara (University of Ljubljana, Faculty of Arts, Center for Interdisciplinary Research in Archaeology) - Nagy, Balázs (Department of Physical Geography, Faculty of Sciences, Eötvös Loránd University) - Rupnik, László (Institute of Archaeological Sciences, Faculty of Humanities, Eötvös Loránd University)

Abstract format: Oral

The colourful pallet of research methods integrated into the investigations of Early Iron Age sites and landscapes on the fringes of the south-eastern Alps has, in recent years, witnessed a tremendous upswing. It has become a melting pot for diverse disciplines, which partly met their limits in the complex conditions of prehistoric settlements and their landscapes. Our primary goal was not to accumulate vast amounts of data, nor to understand one feature or one site, but to develop a 'methodological toolbox' which could be, due to its systematic nature, applied (almost) anywhere in similar environmental and archaeological circumstances.

Our first research step was aimed at understanding the geological and archaeological settings of the area with the help of remote sensing data (ALS, aerial photography). The most prominent areas were further selected for multi-method geophysical surveys. Minimally invasive ground-truthing (including coring and shovel pits) of the identified natural or anthropogenic features located in crucial positions at the sites was conducted to determine the most suitable areas for intensive geophysical surveys, geochemical mapping, and further invasive investigations.

Our approach, when locating sites for coring, is to follow the preliminary assessment of all available data. In this sense, it is a sampling strategy that is always adapted to our knowledge of the archaeological characteristics of the site, recently at Poštela in Slovenia and Süttő in Hungary (Hungarian-Slovenian bilateral project; NRDIO-SNN134635/ARRS-N6-0168). This is also reflected in the further analyses of acquired materials, which are again adapted to their type, archaeological content, etc. Moreover, we also adapt the on-site and laboratory procedures for further analyses of the drilled material.

We cannot completely replace (small-scale) excavations with shallow coring, but we can certainly reliably explain various anomalies documented with non-invasive methods, understand the results better, and transfer the approach and techniques to other similar sites.

6 RECONSTRUCTING THE PREHISTORIC LANDSCAPE IN AND AROUND THE VIKING AGE FORTRESS NONNEBAKKEN, DENMARK THROUGH A BOREHOLE SURVEY

Abstract author(s): Runge, Mads (Odense City Museums) - Jessen, Catherine - Henriksen, Peter Steen (National Museum of Denmark)

Abstract format: Oral

The Viking Age fortress, Nonnebakken, lies beneath Odense in central Denmark and has, since the beginning of the 19th century, been gradually obscured by, and integrated into, the modern city. A series of targeted research excavations have shown that much of the fortress is preserved beneath the city but this, and the fortress' status as a protected historical monument, has meant that any archaeological excavations can only offer glimpses into the past.

A borehole survey and other non-destructive investigations have been carried out over recent years in order to gain a greater overview of the fortress and its cultural-historical and landscape context. Here we present a landscape reconstruction based on borehole data that aims to place the fortress within its Viking Age landscape and which would be otherwise difficult to determine beneath a large city. The borehole data additionally provides significant new knowledge about the fortress' construction and preservation.

The landscape reconstruction data collates all available data from previous excavations, geotechnical drilling, non-destructive surveys, historical maps, etc. together with a targeted new borehole survey. The new survey aimed to fill any data gaps by coring in private gardens, roadsides, riverside areas etc. and gave borehole data from 40 new positions in and around the fortress. The landscape reconstruction was achieved by modeling the collated data and reveals the Viking Age terrain of the site selected for the fortress and its immediate environment.

The landscape context of the Viking Age fortress has since been combined with new analyzes of the potential navigability to the fortress along with models of the preservation and extent of the nearby city's cultural layers in the Viking Age and the Middle Ages.

7 **BORGRING: REVEALING HIDDEN LANDSCAPES AND TACKLING NAVIGATIONAL MYTHS AT A VIKING AGE FORTRESS**

Abstract author(s): Jessen, Catherine - Henriksen, Peter (National Museum of Denmark) - Ulriksen, Jens (Museum of Southeast Denmark)

Abstract format: Oral

A fifth Viking Age ring fortress in Denmark was only confirmed in 2016. This relatively late recognition of Borgring was due to it being more or less invisible in the present-day landscape. Questions of how the fortress was positioned in the original Viking Age landscape, and how post-Viking age landscape changes concealed the fortress so effectively, were addressed by a large-scale borehole survey supplemented by detailed sedimentary and stratigraphic data from archaeological profiles. The borehole and profile data were used to model the changing shape and nature of the landscape. The reconstruction revealed the geomorphology, wetlands, deep channels and streams which were otherwise unidentifiable and aided the archaeological interpretations. This approach shows how data-based reconstructions are important in the understanding archaeological sites and that sometimes, not everything is quite as it seems.

Another important question asked of the investigations at Borgring was whether the location of the fortress close to the Køge stream meant that it was possible to navigate ships upstream from the coast. The modern Køge stream is narrow and undulating in a relatively large valley which is mostly wetlands and frequently flooded. The sediments and stratigraphy from a series of borehole transects across the valley and downstream were documented to ascertain whether this was also the case 1000 years ago. The borehole records together with ¹⁴C dates showed where and when the valley was infilled with peat and lake sediments. A further detailed investigation of a trench immediately in front of the fortress which showed the position of the stream in the valley during the Viking age. The investigation showed that during the Viking period the stream had much the same size and course as that of the modern day and that navigation with vessels any larger than dinghies would not be possible.

8 **INSIDE A FORTIFICATION RAMPART: GEOARCHAEOLOGICAL ANALYSIS OF THE CONSTRUCTION MATERIAL OF THE SEMI-CIRCULAR RAMPART AROUND THE FORMER VIKING SETTLEMENT HEDEBY**

Abstract author(s): Khamnueva-Wendt, Svetlana (Institute for Ecosystem Research, Kiel University) - Kurgaeva, Anastasiia (Cluster of Excellence ROOTS, Kiel University) - Bork, Hans-Rudolf (Institute for Ecosystem Research, Kiel University)

Abstract format: Oral

Investigation of archaeological monuments through coring is a challenging task regarding the understanding of the composition, stratigraphy, and inner structure of monuments. We propose a method of statistical classification and identification of construction materials of earthworks sampled by coring technique, which was applied for the semi-circular rampart in the Viking settlement Hedeby.

The physicochemical properties of 139 samples from two cores through the top of the rampart and from one core through the buried ditch at the outer footslope were determined: weight percentages of gravel, artefacts, bones and charcoal, loss on ignition, magnetic susceptibility, grain size distribution, and element concentrations. After statistical pre-treatment of data (normalization, correlation, standardization), principal component analysis and cluster analysis were applied to distinguish and group the materials according to their physicochemical properties. The resulting clusters were used as a basis for material classification. Some clusters were mildly transformed according to the morphological properties of material.

As a result, 20 groups of materials were distinguished. We could conclude that the rampart consists of material originating from soil horizons, cultural deposits, Pleistocene materials, and mixtures of these materials. These materials were used in different proportions along the investigated transect. It was also revealed that the volume of material excavated from the ditches was not sufficient for the rampart. Due to a large portion of soil horizons in the rampart, it could be concluded that topsoil horizons must have been extracted from large areas around the rampart.

The presented method for statistical classification of material facilitated and objectified the identification of the genesis and possible sources of the materials. Application of this method on additional transects, best combined with geophysical surveys, would help reconstructing the large-scale anthropogenic landscape transformation in Hedeby.

9 'SPEED-DATING' HILLFORTS BY DRILLINGS - CASE STUDIES FROM THE KALININGRAD REGION OF RUSSIA

Abstract author(s): Ibsen, Timo (Zentrum für Baltische und Skandinavische Archäologie)

Abstract format: Oral

Hillfort research highly depends on chronological information. Without, all statements and theories about cultural affiliation, functional interdependencies or their role in the cultural landscape and society remain pure hypothesis. Findings and especially the most present category of pottery from excavations on plateaus, ramparts or ditches, on the contrary, are often difficult to date.

Since 2014 in the frame of the project “Continuity of research and research of continuity” (funded by the Academy of Science and Literature Mainz, Germany), several hillforts in the Kaliningrad Region of Russia were investigated to receive chronological information. Especially the rampart-and-ditch systems contain data about the whole live span of the monuments. In order to avoid costly and expensive excavations, a motor driven vibra core hammer with metal probes of 60 mm diameter and 1m length is used for conducting series of drillings on ramparts and ditches of hillforts, in combination with a larger series of 14C-dating.

This methodological approach, internally called “speed-dating”, allows for the creation of schematic profile sections and their dating by extracting datable organic material even from greater depths and hence from the initial phases of rampart construction.

Since the first successful investigations in Apuolė (Lithuania) in 2014 the method has been further developed and applied to 13 so far not or only roughly dated hillforts in the Kaliningrad Region of Russia between 2014 and 2018 as the main working area in the project. The results show, that also in the Kaliningrad region hillforts emerge already at the end of the Bronze age and form a stable factor of the cultural landscape between the pre-Roman Iron Age and the 13th centuries AD until the arrival of the Teutonic Order.

The paper describes the method of using drillings for dating and discusses the results against the archaeological background of the Baltic Region.

10 HARD CORING, GEOPHYSICS AND EXCAVATIONS: STRATEGY TO ANALYSE KUKULIŠKIAI HILLTOP SETTLEMENT

Abstract author(s): Pranckenaite, Elena - Urbonaitė-Ubė, Miglė (Klaipėda University)

Abstract format: Oral

Kukuliškiai hilltop settlement (Klaipėda district) is the only single layered (883–403 cal BC) Late Bronze Age settlement in the Lithuanian maritime landscape, located closest to the Baltic Sea. Systematic investigation is being conducted since 2017: 130 boreholes were drilled, around 3,5 hectares scanned with GPR and 68 sq. meters excavated. The main goal of investigations is to determine paleo-environment, inner settlement's structure, possible fortifications, economic technologies and diet. The investigation strategy was based on combination of non-invasive methods (GPR and drilling) with testing pits and excavation plots due to very complex and challenging landscape of this settlement. This strategy enabled to reconstruct primary landscape, main traits of community's subsistence economy. It is important to collect data for macrobotanical, zooarchaeological, palinological material, samples for AMS C14 dating, inorganic and organic phosphorus and geomorphological analyses. The presentation is focused on benefits of this complex investigations, limitations and challenges encountered during 4 years' experience in research of this Late Bronze Age site.

11 THE HILLFORTS OF KERNAVĖ: MORE BOREHOLES - MORE KNOWLEDGE

Abstract author(s): Velius, Gintautas (Vilnius University) - Vengalis, Rokas - Pilkauskas, Mindaugas (Lithuanian Institute of History)

Abstract format: Oral

In recent years, Vilnius University and the Kernavė State Cultural Reserve have been carrying out the project “Functional Development of Hillforts - from the Fortified Settlement to the Residence of the Duke”. The main object of this research is a complex of 4 hillforts located in the UNESCO-protected Kernavė archaeological site. The aim of the project is to identify and precisely chronologise the functional development of the Eastern Lithuanian hillforts and the activities carried out on them during the Iron Age and the Middle Ages (5th century BC - 14th century AD). At the same time, an attempt was made to reveal the dynamics and chronology of the transformation of the natural, uninhabited landscape of the Kernavė hillforts into a cultural landscape. The main research strategy was to obtain as much data as possible using none or minimal invasive research methods such as geophysics and drillings.

Three geophysical methods were used: magnetometry, GPR and ERT. These surveys were followed by coring and archaeological excavations. Over 300 boreholes were drilled and sampled for 14C dating. The excavations were carried

out on the basis of the geophysical surveys and the drilling information. The interdisciplinary research data were synthesised to determine the evolution of the hillforts' residential and defensive functions. The new 14C dates obtained have significantly extended their chronology.

The aim of this report is to highlight the importance of coring in such multi-method investigations. The advantages and disadvantages of this method will be revealed and discussed.

12

INTERDISCIPLINARY HILLFORT STUDIES AT THE DAUGAVA RIVER: MERGING AND DECODING ARCHAEOLOGICAL, ENVIRONMENTAL AND LINGUISTIC DATA (INHILLDAUGAR)

Abstract author(s): Schneeweiss, Jens (Centre for Baltic and Scandinavian Archaeology; Cluster of Excellence ROOTS; Kiel University) - Ibsen, Timo (Centre for Baltic and Scandinavian Archaeology) - Kittel, Piotr (University of Lodz, Faculty of Geographical Sciences) - Sikora, Jerzy (University of Lodz, Institute of Archaeology) - Visocka, Vanda (University of Latvia) - Whitefield, Hans (Centre for Baltic and Scandinavian Archaeology)

Abstract format: Oral

In Eastern Europe rivers represent the main gateways for trading flows between Scandinavia and south-eastern continental Europe. The Daugava River is one of the most important traffic arteries in the Baltic region. On the 350 km long Latvian river section, about 30 hillforts give evidence of the high significance of this waterway. Roughly half of them have not been investigated at all. The INHILLDAUGAR project takes this archaeological river landscape into macro scale research focus as a whole system, by combining palaeoenvironmental, archaeological and linguistic studies. The application of non- and minimal invasive field techniques like geomagnetic surveys, drillings and test pits, 14C- and dendrochronological datings are crucial for obtaining valid and evaluable data from a large number of fortifications in a short period of time for understanding the system as a whole in its chronological development. Drill catenae with the ram core auger through the rampart structures allow an approximation of their structure and stratigraphy. Geological and geomorphological investigations for palaeoenvironmental studies are carried out with the hand auger in the vicinity of the most important sites. Detailed drilling can uncover geoarchives and potential bioarchives that can be used for studies on the palaeoenvironment and human-environment relationships. The achieved data is transferred to a GIS. Crucial for validating the dating is a sufficient number of radiocarbon dates, on average about 20 per hillfort. The outcome of the project will be a GIS-based open access atlas, including standardized topographic maps of the archaeological monuments and their immediate surroundings, thematic maps related to the core questions of the project and digital modelling of the Daugava waterway in prehistory. In the talk will be presented the results of the first project year 2022.

Acknowledgement:

- Beethoven-CLASSIC4 joint project funded by DFG (465100096) and NCN (2020/39/G/HS3/01542).

13

INTEGRATING GROUND-PENETRATING RADAR, MAGNETOMETRY, AND TARGETED CORING IN THE STUDY OF IRISH MEDIEVAL SETTLEMENTS AND SETTLEMENT PATTERNING

Abstract author(s): Bair, Andrew (Harvard University)

Abstract format: Oral

Across global contexts, buried settlements are rich archaeological resources, recording the daily lives and repeated practices of ordinary people and diachronically archiving changes and continuities. In their complexity and frequently large size, settlements present a host of challenges for the researcher, who is often limited by time, money, and labor. This paper presents a methodology designed to address challenges inherent in settlement archaeology, by firstly combining datasets of ground-penetrating radar and magnetometry to create large-scale three-dimensional maps of subsurface archaeological features, and secondly coring targeted buried features to better inform geophysical interpretations and to collect paleoethnobotanical, soil, and radiocarbon samples. In doing so, a buried archaeological landscape can be "pseudo-excavated", where features are identified, mapped, and sampled without a single shovel being raised, leaving most of the archaeology intact and preserved. The case study is a medieval cultural landscape in Western Ireland at Ballintober, Co. Roscommon, centered on a newly discovered deserted medieval village but incorporating its wider context, notably a series of smaller dispersed earthwork settlements that dot the surrounding area. The project hopes to reconstruct the history of each site, but also to create a chronology of settlement patterning in the region through the entire medieval period.

WHAT'S HIDDEN IN A CORE? ON THE USE OF MAPS, GPR AND DRILLING IN EARLY MODERN FORTIFICATIONS

Abstract author(s): Pettersson, Claes (Sydsvensk Arkeologi AB)

Abstract format: Oral

In the aftermath of the Kalmar War (1611-1613) it was obvious that the vulnerable north-eastern border of the Danish realm had to be strengthened. Swedish troops had laid waste to twenty-six parishes and the town of Vå in the province of Scania. The solution was to give up two medieval cities in favour of a new fortified town built in the Dutch fashion, surrounded by vast wetlands. So, Kristianstad received its privileges in 1614 while Åhus and Vå lost theirs.

The whole region was mobilized to provide the labour force and logistics needed. The new site was perfect from a strategic point of view, but highly unsuitable otherwise. Large volumes of soil, branches and timber was brought in to create ground fit to build upon. And then fortifications, a church, a royal residence, an armoury, and hundreds of ordinary town houses were built. After the Roskilde Peace Treaty in 1658 Kristianstad became a Swedish garrison town. The fortifications were modernized and enlarged in the following century but declared redundant in 1847 and demolished shortly thereafter. Today very little remains to be seen above ground of the once mighty walls and bastions.

During the last decade the remains of the fortifications has been subject to archaeological investigations. Using a combination of rectified, highly detailed 17th and 18th century military maps and drawings, GPR surveys and extensive drilling has given us new knowledge on exact location and state of preservation together with samples for paleo-botanical analysis. Thus, it has been possible to achieve invaluable information with non-invasive methods before the traditional excavations begin.

Here we would like to present the sources and methods used so far together with the gains and pitfalls encountered in the process. It may prove useful for others when dealing with town fortifications from the Early Modern period.

LIVING AMONG THE RUINS. RE-SETTLEMENT AND IDENTITY FORMATION IN DEVASTATED LANDSCAPES AND ABANDONED CITIES

Session theme: 6. Contested Pasts & Presents

Session organisers: Meier, Thomas (Kaete Hamburger Center for Apocalyptic and Post-Apocalyptic Studies, Heidelberg University; Institute for Pre- and Protohistory and Near Eastern Studies, Heidelberg University) - Moragas, Natalia (ERAAUB-IAUB-University of Barcelona) - Lekakis, Stelios (McCord Centre - School of History, Classics and Archaeology, Newcastle University) - Torras Freixa, Maria (Boston University; Gerda Henkel Fellowship) - Peci, Alessandra (ERAAUB-IAUB-University of Barcelona)

Session format: Regular session

The importance of rootedness in an individually charged built and/or natural landscape is highlighted in the (post-) modern world as being a key ingredient to mental and bodily well-being and positive identity-formation. What happens, however, if this intimate connection between identity and landscape is broken?

This session will focus on the re-occupation, re-settlement and transformation of abandoned, sometimes 'lost' cities and landscapes in the immediate as well as in the long-term aftermath of devastation and de-urbanisation. These abandoned, devastated or ruined places and spaces are often alive in the memories of their inhabitants and are part of cultural memory that implies negotiating identities, constructing mythical topographies, creating new perceptions and instrumentalizing power relations.

We are interested in both temporalities of re-use and re-settlement: What happens in the immediate aftermath, the weeks and months to follow catastrophe and devastation as well as resettlement a long time after abandonment and oblivion of towns and landscapes? We are especially interested in (re-)settlement, de-urbanization and (re-)shaping of rural and urban landscapes after a – mostly human-caused – apocalyptic experience. How did settlement patterns, daily life management such as critical infrastructures and, cultural perception of the abandoned place change? How was it re-used by different settlers and time periods? How did such dystopian experiences impact people's identity and connection with their environments, not the least in terms of resilience and social change? How were abandoned landscapes and lost cities perceived, how were they integrated in the cultural memory and mental landscapes and how did they recode and instrumentalize these urban and rural landscapes?

A wide variety of cultural and historical contexts is highly appreciated. Presentations that point their relevance for global challenges induced by climate change, global inequality, or war are also welcomed.

This session is affiliated with the research project "Living in the ruins of the city of Teotihuacan (Mexico)", funded by the Gerda-Henkel-Foundation and the DFG-AHRC research project "Devastation, dislocation and (re-)settlement. Breaking/replacing the people-place connection in landscape".

1 LIVING AMONG THE RUINS - INTRODUCTION

Abstract author(s): Meier, Thomas (Kaete Hamburger Center for Apocalyptic and Post-Apocalyptic Studies, Heidelberg University; Institute for Pre- and Protohistory and Near Eastern Studies, Heidelberg University) - Moragas, Natalia (ERAAUB-IAUB-University of Barcelona)

Abstract format: Oral

The importance of rootedness in an individually charged social and spatial environment is highlighted in the (post-) modern and globalised world as being a key ingredient to mental and bodily well-being and positive identity-formation. While the impact of heritage destruction on individual and group identities receives more and more academic attention there is still little research into the impact of human-caused, deliberate landscape devastation, processes of de-urbanization and the emergence of abandoned urban areas – and even less research on the re-shaping and re-settlement of landscapes and identities in the immediate aftermath such apocalyptic experiences or on the re-occupation and transformation of built environments. These abandoned or devastated places and spaces are often alive in the memories of the inhabitants and imply negotiating identities, re-constructing mythical topographies as well as functionalities, creating new perceptions and instrumentalizing power relations. How do you survive and how do you live in such abandoned places? How do the inhabitants interact with the destructed environment? How are the elements of a lost past perceived by non-indigenous groups?

2 AFTER THE CITY OF TEOTIHUACAN :A FORGOTTEN ARCHAEOLOGY

Abstract author(s): Moragas, Natalia (ERAAUB-IAUB-University of Barcelona) - Torras Freixa, Maria (Gerda Henkel Fellowship) - Pecci, Alessandra (ERAAUB-IUAB -University of Barcelona)

Abstract format: Oral

Much of the archaeological research carried out in Teotihuacan refers to the classical period when urban development reaches its maximum.

Undoubtedly, the monumentality of the structures and the astonishing quality in the construction of monumental architecture have been key elements for Teotihuacan society but also for the interest of Mesoamerican archaeology. The collapse of Teotihuacan has received some attention but always related to the earlier Classic period. The Academy seems to forget that the population lives in the valley from the past to this day and different cultures and interactions will take place over more than a thousand years. Consequently, the research about the society after collapse is fully accomplished falls considerably. The Project :” Living in the ruins of Teotihuacan “ focuses how the population of Teotihuacan lives in the valley when the organized urban landscape has disappeared and the regional leadership of Teotihuacan seems forgotten. Our project aims to understand the role of the population of the Teotihuacan valley in a very altered landscape and a forgotten (or not) city.

3 THE ACROPOLIS OF LA BLANCA. A MEMORY SPACE AFTER ITS ABANDONMENT DURING THE DECLINE OF THE MAYA CLASSIC CIVILIZATION

Abstract author(s): Vidal Lorenzo, Cristina (Universitat de València) - Muñoz Cosme, Gaspar (Universitat Politècnica de València) - Aliperta, Andrea (Universitat de València)

Abstract format: Oral

The decline of the Classic Maya civilization between the eighth and tenth centuries A.D. led to the abandonment of its splendid cities, most of them built in jungle environments. From then onwards, nature began to invade their colourful buildings and sculptural monuments until they were partially buried by the thick tropical vegetation. Despite becoming uninhabitable as cities, later generations imbued them with new meaning and many of them became memory spaces where ancestors were venerated.

An example of this is the Acropolis of La Blanca, an exceptional Late Classic architectural complex in the Mopán River Valley (Petén, Guatemala). Its principal palace, known as the Orient Palace, has the widest vault in the entire Maya area. This building has been the focus of an exhaustive archaeological and architectural investigation by the La Blanca Project, using new digital technologies for the study and documentation of the Maya cultural heritage. Thanks to this and to the meticulous analysis and interpretation of the archaeological remains found inside, it has been possible to reconstruct the gradual deterioration of the building until it became an archaeological ruin and the place chosen for some of the most significant burials of this period in La Blanca.

Focusing on the Acropolis of La Blanca as a case study, the paper discusses the reuse of abandoned structures in Maya cities and examines how these ruined buildings were perceived and integrated into the cultural memory of the new occupants of the Postclassic period.

4 UNDERSTANDING THE END: DEVELOPING A THEORETICAL FRAME FOR DEVASTATION IN THE LANDSCAPE

Abstract author(s): Fairclough, Graham - Lekakis, Stelios (Newcastle University)

Abstract format: Oral

Violent, abrupt and deliberate human-made events that break the connection between landscape and social identity and cause loss of human lives, settlement/farming land destruction and population dislocation are - regretfully - frequent in the historical archive, from the Siege of Melos (Greece, 416 BC) to the Srebrenica massacre (Bosnia - Herzegovina, 1995) and from the Irish Potato Famine (1845-1852) to the Hutu-Tutsi strife (Rwanda & Burundi, post 1959). Starting with one example - the military 'burning' of the Rhenish Palatinate by French armies in 1688-89 - but expanding outwards to other periods and places, the AHRC-DFG project "Devastation, dislocation and (re-) settlement: Breaking/replacing the people-place connection in landscape" will create an initial theoretical conceptualisation associating 'landscape', 'devastation' and 'response'. The theoretical framework will be used to categorise specific cases drawn from the disciplines of history, anthropology and archaeology in an attempt to develop building blocks for an archaeology of destruction, disruption and re-habitation.

5 A REBUILT LANDSCAPE: THE PALATINATE COUNTRYSIDE AFTER ITS DEVASTATION DURING THE NINE YEARS WAR (1688-1697)

Abstract author(s): Vuletic, Nikola (Ruprecht-Karls-Universität Heidelberg; Christian-Albrechts-Universität zu Kiel)

Abstract format: Oral

For a long time the scale of the devastation of the Electoral Palatinate, carried out as a defensive strategy by the armies of the French King Louis XIV between 1689 and 1693 during the Nine Years War, was seen by historians as so enormous that it rivalled the damage done by the Thirty Years War, 1618-48. The devastation left many traces in the cities and their surrounding landscapes, some of them glaringly obvious, like the ruins of castles, some hidden in plain view, like the existence of woods where agriculture was once practiced and baroque cityscapes that don't have anything in common anymore with the medieval structures that had preceded them. However, because most of the archaeological and historical research on the devastation of the Palatinate as well as the contemporary news coverage was focused on the cities, the surrounding countryside with its villages was often presumed to have been destroyed just as completely. The actual extent of the countryside's devastation was never thoroughly researched and there is compelling evidence that some, if not many, villages labelled as destroyed by historians and contemporary writers actually survived relatively unscathed. This presentation attempts to take a closer look at how the devastation wrought during the Nine Years War affected the Palatine countryside in a way that is still visible or recognizable today. Did the devastation and the subsequent reconstruction and resettlement efforts completely change the villagescapes as they changed the cityscapes, or did they fail to do so, and why? And are there noticeable material differences between villages that survived and those that were razed to the ground and rebuilt? Answering these questions will hopefully not only contribute Palatine historiography, but also shed light on how early modern warfare affected cities and their surrounding countrysides respectively.

6 HOME IN A FOREIGN LANDSCAPE: AN ANALYSIS OF RE-SETTLEMENT STRATEGIES OF PALATINE IMMIGRANTS THROUGH THE LENS OF CRITICAL HISTORICAL CARTOGRAPHY

Abstract author(s): van Duijvenvoorde, Julia (Universität Heidelberg; Vrije Universiteit Amsterdam)

Abstract format: Oral

After months of journeying down the Rhine and waiting in makeshift camps around London, thousands of 'Poor Palatines' were finally re-settled on the estates of Protestant landowners amongst the rolling hills of Ireland, County Limerick in the years 1709 and 1710. Upon arrival, a wet, boggy and rocky landscape unfolded before their eyes, only vaguely reminiscent of the famously lush viticultural lands they reluctantly left behind in the midst of war-induced devastation and poverty. Considering the countless topographic, linguistic, social and cultural differences that the Palatines encountered in Ireland, the following question comes to mind: what are some of the strategies that they employed to make sense, reappropriate and ultimately make a home of this foreign Irish landscape? With this paper, I hope to contribute to the broader theme of re-settlement and homemaking in the landscape in two main ways. First, I introduce a more holistic and interdisciplinary approach to the concept of 'home' that allows to link and reflect on different constitutive aspects of the matter that are normally confined to specific academic disciplines. Second, I show that critical map analysis can contribute to a better understanding of historical processes of re-settlement in the landscape, challenging the widespread assumption that maps are a 'dangerous type of evidence'. In order to do so, I cross-compare historical maps from the Ordnance Survey Ireland depicting first- and second-generation Palatine

settlements around County Limerick, paying particular attention to elements such as place names as well as settlement patterns, use and situatedness.

7 MEMORIAL FRAGMENTS. RUIN INTERACTIONS, SPATIAL CONCEPTS AND NARRATIVES AT THE NEOLITHIC SETTLEMENT OF GÖBEKLI TEPE

Abstract author(s): Kinzel, Moritz (German Archaeological Institute Istanbul) - Schönicke, Julia (Freie Universität Berlin)

Abstract format: Oral

The Neolithic settlement of Göbekli Tepe (SE-Turkey, ca. 9500–8000 calBCE) is situated on a terraced limestone plateau and well-known for its special buildings with up to 5.5 m high monolithic T-shaped pillars. With increasing size of the settlement, the buildings accumulated on the steep slopes of the plateau. Inevitably, while the load of the structures became too heavy, severe landslides occurred that increased during strong winter rainfalls.

The Neolithic people reacted to the challenging periodical destruction of their built environment and put great effort in repairing and maintaining the structures which became an integral part of their daily practices. We demonstrate that ruins within the settlement served as sources for extracting building material such as secondary used wall stones, grinding stones, soil mixed with artefacts, and pillar fragments. The latter, even if broken to small pieces, were often placed in prominent positions as spolia. Re-using building materials can be addressed as incidental routines whereas others might have been intentional ritual practices. More than half of the building material in the latest phase of occupation consists of reused objects. Post-abandonment interactions, in turn, are detectable in room fills and their geochemical composition. Ruins, therefore, were still an integral part of the settlement, not only for extracting building material but temporal shelter, meeting places or secret hide-outs and affected people's actions.

Despite all efforts, it became impossible at a certain point to keep the settlement going due to its challenging topography. The memory of the site has been carried on in narratives, reflected in settlements with comparable buildings, T-shaped pillars and similar iconography continuing to exist in the vicinity of Göbekli Tepe. Today, 10000 years later, Göbekli Tepe is re-occupied by politicians, archaeologists and tourists who appropriate the site in their own way – scientifically, politically, and pop-culturally.

8 HOLDING ON TO URBAN LIFE? ENDURING URBANISM IN LATER MEDIEVAL ENGLAND

Abstract author(s): Jervis, Ben - Morton, Benjamin (School of History, Archaeology & Religion, Cardiff University)

Abstract format: Oral

The apparent 'decay' and 'decline' of towns in the 14th century is commonly linked to the devastation of the Black Death, resultant economic turmoil, and the impacts of climatic fluctuation on agriculture. Yet, the concepts of 'decay' and 'decline' are relative. Whilst some urban areas were abandoned or saw a decline in the intensity of occupation, life persisted. Here, we argue that in enduring through crises, urban households and communities re-negotiate what it is to be urban, a process which perhaps resonates with the contemporary re-orientation of urban economies and patterns of labour following Covid lockdowns and subsequent economic challenges. As such, we do not see the towns of this period to be any less 'urban' than their predecessors, but for their urbanity to surface in different ways. Drawing on case studies from medieval England (derived from the ongoing UKRI funded project ENDURE: Urban Life in a Time of Crisis: Enduring Urbanism in Later Medieval England) we explore persistence and change in urban lifeways through reconstructing the experiences of urban households. We ask how households adapted to new urban realities, how they capitalised on the potential of disruption or suffered from its consequences and how elements of their lives endured. By focussing on endurance at the household scale, we propose that it is possible to explore these processes from the 'bottom-up', to understand how the experiences of those marginalised in narratives of seigniorial foundation and civic institutions, led to the emergence of situated forms of urban becoming. Our aim is to move away from a focus on the apparent desolation of townscapes to engage with lived experience, to understand the diversity of urban realities – in short to question what an apparent process of 'de-urbanisation' can tell us about what it was to be urban in the later Middle Ages.

9 WHICH ONE IS THE GHOST TOWN? REFLECTING ON THE RUINS OF REPAIR IN EARTHQUAKE ITALY

Abstract author(s): Di Giuseppantonio Di Franco, Paola (University of Essex)

Abstract format: Oral

The lexicon of repair suggests that when a place is ruptured due to 'natural catastrophes', repair should be conceived as a form of darning, "a stitched response to holes/breaks/wounds/ that develop in knitted fabrics". The darning process requires careful understanding of how the rupture ought to be repaired, as well as a close examination of how to start repairing from the threads that remain. Darning after a catastrophe occurs when the reconstruction project considers

the identity of the community affected by the disaster. Otherwise, the risk is that the rebuilt town will produce a new rupture, within communities, and between communities and places.

This paper will clarify this point by presenting the results of a study conducted in Senerchia, a town in Irpinia (Campania, southern Italy) hit by the 1980 earthquake.

This research involved interviews with community members and clarifies how the architectural layout of an urban context embodies social dynamics. The new Senerchia was rebuilt near the remains of the old village, known by many as one of the Italian ghost towns. The reconstruction ripped apart the town, which became three times longer than it used to be, but socially dismembered and “empty”. This study underscores the profound social value of repair, a process that must embed past experiences, present needs, and heritage values, before propelling a community into the future. It is part of a larger project, titled REPLACE (Rebuilding a Sense of Place) and funded by a UKRI Future Leaders Fellowship, which explores the sociocultural role of 3D technologies in increasing community resilience after natural catastrophes.

10 **LIVING AMONGST THE ,RUINS': RURAL TRANSFORMATION AND THE LOST IDENTITY OF SANTA ON THE HIGHLANDS OF THE EASTERN BLACK SEA**

Abstract author(s): Abay, Pelin (Independent researcher) - Serin, Ufuk (Middle East Technical University, Dept. of Architecture)

Abstract format: Oral

The rural settlement of Santa is one of the most outstanding examples of Pontic rural heritage sites in the Eastern Black Sea (Turkey). The site includes seven neighborhoods scattered on the highlands within the modern Province of Gümüşhane. Following the Population Exchange between Turkey and Greece with the Lausanne Treaty in 1923, Santa, along with numerous other rural settlements, has undergone a significant transformation affecting both its built environment and socio-cultural structure. Along with the rural depopulation occurring in the aftermath of this compulsory exchange of peoples, the majority of buildings, once occupied by an Orthodox Greek community, was abandoned and gradually became ruins. Although the site was resettled by a limited number of Turkish inhabitants, it is mainly used as a seasonal highland settlement (yayla) in summer time. As a result of the current appearance of the physical environment, the site was named 'Santa Ruins' (Santa Harabeleri) and irrelevantly designated as a '3rd degree archaeological site' in 1999. Since then, the seasonal inhabitants are literally living amongst the 'ruins'.

The present contribution explores processes of rural depopulation and abandonment, transformation and re-settlement at Santa in the aftermath of the Population Exchange. How did such processes affect the built environment and local identity? How are these landscapes of change integrated into the cultural memory of the emigrant Rums and, equally, how are they perceived and used by the new settlers? This paper also argues that this rural settlement, incorrectly referred to as the 'Santa Ruins', needs to be re-identified, in light of its past and present attributes, as a 'continuing cultural landscape': a settlement where traditional methods of life are merged with modern demands and where evolution continues due to the existence of a local community, although seasonal.

11 **MAKING AND UNMAKING THE PAST. URBANIZATION PROCESSES, LIMINALITY, BELONGING AND SOBA ARCHAEOLOGICAL SITE (SUDAN)**

Abstract author(s): Drzewiecki, Mariusz (Polish Centre of Mediterranean Archaeology, University of Warsaw) - Kurcz, Maciej (Institute of Culture Studies, University of Silesia)

Abstract format: Oral

For the Sudanese, the term Soba has essentially two meanings today. The first refers to the former capital of the medieval Nubian Kingdom of Alwa (5/6-15/16 century CE). Its ruins constitute one of the largest archaeological sites in Sudan covering approximately 275 ha ('Past Soba'). The second describes the suburban zone of the Khartoum agglomeration ('Modern Soba'). 'Past Soba' and 'Modern Soba' are two intertwined space-time continuums, whose relations are multi-layered. Especially since the 1990s, when the ruins started to be radically reduced by modern settlement.

This paper will explore how communities re-settling the former metropolis conceptualise the past of this place in order to organise their daily life, establish linkage to the place in the search for roots in their new place of residence and respond to shifting political, economic and environmental factors. The research is part of the project entitled 'Soba – the Heart of Alwa' initiated in 2019.

LOST AND FOUND ABELLINUM. THE RESHAPE OF AN HISTORICAL LANDSCAPE AND THE CONSTRUCTION OF A CULTURAL MEMORY

Abstract author(s): Musmeci, Daniela - Santoriello, Alfonso - Radaelli, Lorenzo - De Girolamo, Laura (University of Salerno)

Abstract format: Oral

Abellinum, the modern city of Atripalda (Campania, Italy), represented one of the most important urban centres of Roman Hirpinia. Located on the Civita plateau and already frequented in the Samnite age, the city became a Sullan colony and prospered during the imperial period.

From the 5th century A.D. a gradual abandonment started: phenomena, of short and long term, equally devastating for communities (the aftermath of the eruption of 472-505 A.D. and wars; the depopulation of the city, etc.) led to the displacement of the population to the area of the current city of Avellino. This event caused the deconstruction of the ancient urban plan and a progressive landscape transformation, from urban to rural.

The modern city of Atripalda settled again on the banks of the Sabato river, around the plateau, de-urbanised and used for agricultural and mining activities; it developed mainly in the modern and contemporary age. The Civita represented a productive and social hub for the community, a meeting place and also a refuge during WWII. The mining activities effected the buried city destroying archaeological layers and reshaping landscape forms.

Local communities have shown adaptability, resettling and re-functionalising urban space, even after the last catastrophic event, the Irpinia earthquake in 1980: reconstruction has also led to new archaeological discoveries and started a season of research on the ancient centre.

The project led by the University of Salerno focuses on it: the aim is to recover knowledge of the ancient city in order to reconstruct a cultural ecosystem for the benefit of the community. The recovery of the Civita thus is a way to reclaim the past in order to revive it daily within a green space, for public enjoyment, where collective memory lives, identity is created, and the urban and rural landscape is recoded.

DEVASTATION INVERTED? CYCLICAL LANDSCAPE RUINATION AND RE-APPROPRIATION IN THE VELUWE AREA, THE NETHERLANDS

Abstract author(s): Egberts, Linde (National Agency for Cultural Heritage of the Netherlands; Vrije Universiteit Amsterdam)

Abstract format: Oral

This paper focuses on the “appropriation” of a ruined landscape in the Netherlands: the Veluwe. Even though it may not seem evident now, the sandy landscape of the Veluwe Plateau in the Netherlands used to be a relatively densely populated area, where, in the Middle Ages, farming and iron production brought local wealth to the communities. The intensification of these practices however also led to the depletion of the ecosystem: forests were cut for charcoal production and heathlands were overgrazed by cattle. Drifting sands expanded and forced communities to abandon their settlements, which in some cases disappeared under the sand dunes completely. Kootwijkerzand is one example, that has completely been submerged by what is now the largest sand drift area in Western-Europe. Landscape elements in neighbouring settlements testify from the measures inhabitants took to defend themselves against submersion by sand.

In the twentieth century it was exactly the vastness of the uninhabited sands, heathlands and forests that was monumentalized for their natural heritage values. Its devastatedness became the core attraction for newcomers, who did not settle here, but turned it into a prime tourist destination, dotting the area with campsites, vacation enclaves and second homes.

This paper approaches the case study from a landscape biography perspective, based on literature study, archival research and landscape observations. It aims to understand how the cultural perception of the Veluwe landscape changed over the past century; from abandonment to heritagisation. The historical understanding of the inversion of landscape settlement, use and place attachment gains new relevance the light of climate risks, that once again threaten this fragile landscape.

FOR AN ARCHAEOLOGY OF HOUSEHOLDS: NARRATIVES, LANDSCAPES, MATERIALITY, INEQUALITIES, GENDER, RACE, ETHNICITY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Santos, Joel (University of Leicester) - Pacheco, Susana (CFE-HTC Nova University of Lisbon)

Session format: Regular session

A household is not just a space, nor a family, nor a house and not even just a domestic place, and, nonetheless relationships exist among all of these spaces, people, and things that might be included in what a household is. Households among other things are sites of conflict and struggle, emphasizing class, ethnicity, race or gender. Wilk and Rathje said that “archaeologists do not dig up households. They dig up dwellings and domestic artefacts but not social units” (1982), thus it is up to archaeologists to reconstruct the different social dimensions of those units. Households, as a multidimensional relational system of networks delimited by space, can be deconstructed into narratives and discourses, landscapes – be they mental or physical – and materiality. Its thread also has the potential for an intersectional analysis, weaving together inequalities, class, gender, race, ethnicity and sexuality.

We welcome papers approaching places with the traditional view of households such as conventional families’ domestic places, but also from corporate households such as brothels, prisons, asylums, hotels, refugee camps, hospitals, monasteries, barracks, from Prehistory until five minutes ago. Archaeology as a discipline that is grounded in the present also has the potential to become a politically engaged science, and, thus, papers that envision households as sources of contemporary debates will be strongly appreciated, together with papers engaging with the concept and potential household definition.

ABSTRACTS

1 RETHINKING HOUSES AND HOUSEHOLDS: CAPOTE AND THE SOCIETY OF THE CELTIC BETURIA

Abstract author(s): Berrocal-Rangel, Luis (Departamento de Prehistoria y Arqueología) - Ruano, Lucia (Universidad Complutense de Madrid) - Paniego, Pablo (Instituto de Arqueología de Mérida - CSIC) - Sánchez de Oro, Pablo (Universidad Autónoma de Madrid)

Abstract format: Oral

The domestic space is designed not only for functional reasons for the human group, but also for social and cultural reasons. The aim of this contribution is to discuss the Late Iron Age domestic architecture of the Southwest of the Iberian Peninsula, taking as a starting point one of the most important archaeological sites of the period: Castrejón de Capote, Badajoz (5th BC – 1st AD). Between 1985 and 1996, archaeologists partially excavated this site, unearthing more than thirty houses that have hardly been investigated or published. After studying grey literature and old excavation reports, we present the results of our constructional, typological and spatial analyses of these structures, that have allowed us to propose spatial narratives and organisational models for the different phases of occupation of the site. Comparing the results with the data we have from other nearby settlements – Villasviejas del Tamuja, El Raso and La Coraja, for the prehistoric period, and Los Castillejos, Nertóbriga, Fornacis and Mesas de Castelinho, for the early Roman phase –, we seek to better comprehend the social dynamics surrounding houses and household of the Celtic Beturia. With this study of the Iron Age dwellings, our aim is to provide social content to the spaces we analyse, reviewing the archaeological record to discover the nature of the human groups that designed, built, inhabited, reformed and abandoned the domestic structures.

2 SCHOOL DAYS: HOSTEL LIFE AT BOTSHABELO MISSION STATION, MPUMALANGA, SOUTH AFRICA, IN THE FIRST HALF OF THE TWENTIETH CENTURY

Abstract author(s): Swanepoel, Natalie (University of South Africa)

Abstract format: Oral

Botshabelo Mission Station was established in the second half of the nineteenth century by the Berlin Mission Society in what is today Mpumalanga, South Africa. Educational offerings for converts who lived on the station, as well as those within the larger mission network, soon became an important component of life on the station. This culminated in the early twentieth century with the building of a new seminary and the development of a training institute that was eventually taken over by the apartheid government in the 1950s. The legacy of mission education has long been contested in South African history – they were one of the few places where Africans could access a formal education and thus produced many alumni who went on to become political, social and artistic leaders. At the same time, mission schooling also served the interests of the colonial and white minority governments. The institutional households of the

Botshabelo hostels were contexts in which German Lutheranism shaped an emerging African Christianity within the broader context of a newly formed Union of South Africa. This presentation will explore the experience of pupils at the school. The excavation of a large midden at the site in 2015 revealed it to be the discard site for material from the hostel kitchens and living quarters associated with the institute. The archaeology (both excavation and site survey), in concert with documentary accounts and the pictorial record, reveals insights into student diet, hygiene practices, educational programmes, gendered identity and other aspects of their daily life, not evident in or easily gleaned from the documentary record alone.

3 BETWEEN FAMILY HEROES AND SUPERSTITION: HOUSEHOLD CULTS IN ANCIENT ITALY

Abstract author(s): Piccioni, Aura (KU Eichstätt-Ingolstadt)

Abstract format: Oral

As several ancient sources remind us, household cults held a peculiar status among ancient expressions of religio and were occasionally regarded with suspicion—for example, as ‘superstitious’, as Plato himself notes in his discussion of the ideal State. However, the archaeological reality of pre-Roman Italy is significantly more complex than textual sources can convey, not least in the consideration that the distinction between ‘public’ and ‘private’ cults has been rendered obsolete by recent research (R. Parker, *Public and Private*, in R. Raja, J. Rüpke (eds.), *A Companion to the Archaeology of Religion in the Ancient World*, Oxford 2015, pp. 71-80; A. Piccioni, *Culti domestici in Italia meridionale ed Etruria*, Regensburg 2020, with bibliography).

For instance, research in recent years has allowed us to individuate hero cults within aristocratic homes of Southern Italy’s indigenous population during the Archaic period, as exemplified by the case study of Monte Sannace (Monte Sannace. *Gli scavi dell’acropoli* (1978-1983), Galatina 1989; etc.). Alongside these monumental, ‘official’ expressions of household cults built around the figure of an ancestor, there are, of course, ‘humbler’ modes of worship, connected to rites of passage and to the mundus muliebris, as indicated by evidence from other settlements. It is precisely rites of this nature that likely furnished the basis for Plato’s characterization of household cults as superstitious. A *tabella defixionis* (4th–1st c. BC) from the Oscan settlement of Roccagloriosa, likely written by a woman, is exemplary in this sense.

However, the evidence from the central and southern parts of the Italian peninsula is particularly rich and varied. Therefore, the present paper aims to offer a survey of the situation in ancient Etruscan, Latin, Greek, and indigenous Southern Italy through the presentation of selected case studies.

4 MAKING A HOUSEHOLD IN EARLY MODERN TOWN OF TURKU, FINLAND –ARCHAEOLOGY AND CONTEMPORARY SOURCES OF WOMEN’S ACTIVITY AND OWNED BELONGINGS

Abstract author(s): Niemelä, Tia (Univeristy of Helsinki) - Uotila, Kari (Muuritutkimus Oy; Univeristy of Helsinki; Univeristy of Turku) - Helamaa, Maija (Muuritutkimus Oy)

Abstract format: Oral

In historical periods contemporary sources could be used together with archaeological data. In order to research the people from the past in a micro level, contemporary sources can give a lot of personal information about plots, buildings and personal belongings such as clothing, high value metal objects e.g.; gold, silver and copper objects, and other things used in everyday life. In Finland the volume of contemporary sources is growing almost exponentially when it comes to the Early Modern period those being still rare at the Medieval times. This gives a possibility to combine the data from archaeologically excavated sites and historical contemporary sources about household and living. The largest urban archaeology excavation in Finland so far was Turku Market Square excavations from 2018 to 2022. The area included almost 30 different town plots dating from 1650 to the year of the Great Fire of Turku 1827, when the area was destroyed by the fire. In the Early Modern period Finland only widows could be in charge of business, but it was not unusual for women to own a plot. This paper is going to present a couple of town plots from Turku Market Square owned by women. It is going to discuss possibilities to trace women’s activity on the plots and making a diverse general view about the objects used in everyday life in early modern town by women. In Finland the probate inventories, which includes the exact list of dead persons owned property, are rarely used together with archaeology. What information archaeology and contemporary sources can give about women’s activity? What kind of objects did women of Turku Market Square owned in early modern period? Is archaeological evidence about socioeconomic status of a household showing similar standard of living than the contemporary sources?

5 SPACE, THE FINAL FRONTIER – RECONSTRUCTING THE LATE COPPER AGE HOUSEHOLDS IN THE CARPATHIAN BASIN

Abstract author(s): Rajna, András (Hungarian National Museum; Ferenczy Museum Center) - Fábíán, Szilvia (Hungarian National Museum) - Marton, Tibor (Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Network) - Csippán, Péter (Institute of Archaeological Sciences, Eötvös Loránd University) - Priskin, Anna (Déri Museum) - Daróczi-Szabó, Márta (Budapest History Museum) - Czifra, Szabolcs - Klinga, Flóra (Hungarian National Museum)

Abstract format: Oral

Reconstructing the Late Copper Age household units is quite problematic in the Carpathian Basin. The house, which is supposed to be the center of the household leaves no – or almost no – trace, that can be identified during the excavations. Thus we have to start investigating other factors: we have to decipher the size and role of the household from the finds, recognizable settlement features, and activity zones. This investigation is based on the analytical examination of the excavated settlement materials from the Late Copper Age Baden complex. Examining large-scale sites, which cover different regions and different landscape units in the Carpathian Basin, our research team not only tries to identify the household units but also tries to map their local and regional relationship system, using archaeological and natural science methods to compare the results in microregional and regional level.

To create a narrative, we must try to delineate the household units and the activities which could be carried out within the household and outside in the community arena. Through this, we can take attempt to reconstruct the social connections between them and, their relationship with each other, and with the settlement as a whole. We can estimate the differences and inequalities among the households, and settlements, within the socio-economic environment in the Late Copper Age.

6 AT HOME IN ROSCOMMON: AN ARCHAEOLOGY OF THE RURAL HOUSEHOLD IN THE WEST OF IRELAND C.1700-1980

Abstract author(s): Campbell, Eve (Archaeological Management Solutions)

Abstract format: Oral

During recent works on the N5 Road Project in County Roscommon, in the west of Ireland, archaeologists from Archaeological Management Solutions excavated and surveyed over twenty small rural houses ranging in date from the eighteenth to the twentieth centuries. While all broadly conforming to established vernacular forms and representing the houses of the tenant class on the large estates characteristic of rural Ireland into the early twentieth century, the buildings and their assemblages varied considerably. The significant corpus of data generated during the scheme provides insights into the diversity of rural households in the period between c.1700 and c.1980, elucidating social relationships both within the household and between the household and the wider world. This paper will examine what the rich material record can tell us about the changing nature of the rural household across this period. It will discuss the household both in the context of internal dynamics (gender, age, class) and external dynamics (tenant-landlord relationships, the Great Famine (1845-52), Ireland's role in the British empire, and Independence).

7 EXCAVATIONS OF DOMESTIC SPACE AT SEGESTA, SICILY: RESULTS OF THE 2022 AND 2023 SEASONS OF THE ARIZONA SICILY PROJECT

Abstract author(s): Schon, Robert - Blake, Emma (University of Arizona) - Ducati, Fabrizio (Università degli Studi di Palermo) - Wigodner, Alena (Princeton University)

Abstract format: Oral

This paper presents the results of the 2022 and 2023 seasons of the Arizona Sicily Project's excavations in the residential quarter of the ancient city of Segesta, Sicily. Segesta was founded by a local indigenous group, known as the Elymians, in the Archaic period (c. 6th century BCE) and flourished for several centuries before the city's decline during the Roman Imperial period. It was then reoccupied in medieval times. Our work focuses on a domestic structure, west of the Agora, on the northwestern slopes of Monte Barbaro. In 2022, we opened a 5m x 5m trench adjacent to the area briefly excavated in 1978. Those earlier excavations revealed a portion of an archaic period floor level inside a modest rectilinear dwelling. Our project seeks to expand on previous work to study households at Segesta using contemporary analytical methods. Near the surface, we exposed the corner of a stone masonry structure that likely dates to the medieval period. The walls that meet at this corner are aligned with walls in the 1978 trench and we interpret them to be from the same building. Ceramics and other household artifacts from the fill of this structure provide a chronological range of 6th C BCE to the early Middle Ages with a gap between the 7th and 10th centuries CE. The artifacts we have recovered thus far include local and imported pottery, figurines, jewelry, loomweights, and animal bones. Collectively, this assemblage of domestic material culture reveals a picture of quotidian affairs and pri-

vate life at Segesta that contrasts with the activity at its public monuments, such as the Doric temple and Hellenistic theater.

8 CAPTAINS, LANDLADIES AND MERCHANTS RESIDING IN THE SAILORTOWN - THE HARBOUR DISTRICT MASTHUGGET, GOTHENBURG REVISITED IN 1816

Abstract author(s): Carlstein, Caj - Brown, Oliver - Nilsen, Andrine (Rio Göteborg Natur- och kulturkooperativ)

Abstract format: Oral

Suburban areas dependent on sea- and landbased maritime industries are referred to as maritime societies or sailortowns. We have limited knowledge about the physical and social geography of port towns because traditional narratives often diminish their contribution to the overall town economy through depictions of sailortowns as poor, dangerous and immoral places and its population as problematic. This viewpoint misses out the extraordinary vitality and importance of the ports in the early nineteenth century. In this presentation we will challenge these narratives, through a bottom-up study, analysing a combination of a large-scale archaeological investigation of the harbour district, historical maps and archival studies.

We will discuss the household from the perspective of a maritime community focusing on the harbour plots that held both tenement houses for workers and officials, as well as formal gardens and town houses of the upper bourgeoisie. These dwellings and urban backyards had to compete for space with marine related activities on the piers i.e., the loading and discharging of cargo from the ships, warehouses, wet storage for timber, tobacco factories and so on. The fact that the piers were inhabited to such an extent was a surprise for us, and so was the mix of people living there – landladies with flats to rent, captains and skippers, custom officials, apprentices and maids sometimes 37 persons in one building, not to mention a large section of Scottish immigrant merchants. The pre-industrial maritime society thus display social diversity and entrepreneurship in contrast to dark depictions of the late 19th century.

9 HOUSEHOLDS AS PROXIES: REASSESSING SOCIAL DYNAMICS IN THE NW IBERIAN IRON AGE (9TH-1ST CENTURIES BC)

Abstract author(s): Álvarez, Samuel (Universidade de Santiago de Compostela; INCIPIT - CSIC)

Abstract format: Oral

This paper proposes an approach to the social dynamics of northwestern Iberian Iron Age, focused on the study of the domestic sphere. Tackling an analysis of different characteristics of the domestic units (living space, internal structuring, morphology and construction techniques, archaeological context, settlement layout, etc.) a *longue durée* of study of the Iron Age societies is proposed. The main objective is to present a methodology to study social dynamics at different scales and thus build a multi-scale historical and archaeological narrative about the development of heterogeneous processes in Iron Age Societies.

Thus, this work explores the changes and continuities in the domestic field as a means to understand social organization, considering that the way that houses were inhabited and structured reflects part of the societal ethos. It also aims to provide a more “temporal perspective” in a field of study usually focused on space. Our intention is to suggest a narrative that allows to “flow” social narratives, avoiding static or prefixed interpretations and thereby turning dwellings and households into representative proxies of social change.

10 WHAT MAKES A HOUSE - MATERIAL CONNECTIONS IN FUNNEL BEAKER CULTURE HOUSES

Abstract author(s): Bockmeyer, Sarah (Kiel University)

Abstract format: Oral

The first houses in north-west Germany, i.e. Lower-Saxony, were built by the Funnel Beaker Culture West groups (3500 – 2800 BC). They are composite buildings connecting many different materials in one place. Trees were felled, inserted into the ground anew and connected with wattle and daub walls, therefore, clay tempered with straw or even animal dung was used. The roofs – potentially pitched ones – were thatched with straw or similar. There are three different building types, grubhuts, houses with only one room, and the majority of house floorplans in the area have up to four rooms.

Furthermore, from 3300 BC onwards, one room of multi-roomed buildings seems to have been reserved for ancestral “energies” as a single earthen burial could be observed and in one case, the pit of an erected boulder was found despite further earthen burials and megalithic tombs being in the near vicinity of all observed intra-house burials.

It is argued that building these houses connected the people with the land, bringing together different materials that they dealt with on a day to day basis but which then formed shelter and community. Furthermore, the houses with ancestor rooms will be closely inspected and potential explanations are given for the inclusion of dead people in the building of a house.

AN ARCHAEOLOGICAL VISION OF FECES AND URINE MANAGEMENT IN EARLY MODERN PORTUGUESE URBAN HOUSEHOLDS

Abstract author(s): Casimiro, Tania (FCSH-UNL) - Santos, Joel (University of Leicester)

Abstract format: Oral

In the period from the end of the Muslim occupation to the 19th century there were no “toilets” or private spaces where to evacuate one’s bowels and bladder in Portuguese households. While living in the country it was particularly easy to attend to your needs anywhere, how did people handle while living in urban centers, where moral stated that one could not simply evacuate in front of everyone? The solution were chamber pots or wood barrels where one could urinate and defecate in, located either in corners or in the sleeping room. Archaeological excavations have found a huge amount of this evidence and considering the number of pots found everyone had access to one. The purpose of this paper is to discuss the way people defecated and urinated in early modern urban households and how the study of archaeological evidence can promote the debate about a spatial analysis of where these actions could take place withing Portuguese urban houses; to analyze the materiality of defecation and urination and discuss how can these artefacts reflect different genders, identities and social inequalities; and to discuss how did households got rid of these excrements and all the economical and social process of that management.

HUMAN STORIES AND HISTORIES IN THE ERA OF INTEGRATED SCIENCE

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Thompson, Jess - Robb, John (University of Cambridge) - Tafuri, Mary Anne - Soncin, Silvia (Sapienza University of Rome)

Session format: Regular session

Archaeologists can study ancient people in more detail than ever before. Bioarchaeological methods have rapidly developed in four key directions: (i) skeletal investigations of new ways of studying health and activity; (ii) Biomolecular approaches, including genetic ancestry, kinship and disease, isotopic studies which increasingly address incremental analyses of life trajectories, and emerging proteomic and metabolomic analyses; (iii) taphonomic studies providing new insights into ritual and post-mortem trajectories, and (iv) grounding these in their specific archaeological context. For studying social life, the real breakthrough comes not from a single technique, but from the nuanced pictures that emerge when multiple techniques are combined. On an individual level, these result in increasingly multidimensional biographies. On the group level, this may give us a chance to see how people of different kinds related or experienced different life risks and social opportunities. This session explores the detailed human histories that we can create through multidisciplinary bioarchaeological approaches: stories of gender differentiation, kinship dynamics, differential activity, health and nutrition, and social values associated with different kinds of people.

Multidisciplinary bioarchaeology clearly provides exciting opportunities, but the field is still emerging. This session focuses both upon the gains of integrated multidisciplinary bioarchaeology, and reviews the landscape and challenges of the field so far. We are interested in hearing from projects – both small- and large-scale – across all regions and periods which have integrated multiple analytical approaches to reveal nuances in past social formation and identities. Asides from past human histories, papers might reflect on current practice, for example: how do we coordinate work across specialists with different frames of reference? How is such research funded and organised, and what filters does this impose? What are the practical and ethical considerations, and how can we maximise information from multiple source methods rather than from a single approach?

ABSTRACTS

DOING MULTIDISCIPLINARY BIOARCHAEOLOGY: BASIC IDEAS, GOOD PRACTICE AND CARDINAL SINS

Abstract author(s): Robb, John (University of Cambridge)

Abstract format: Oral

New methods and approaches require new tools and ways of doing research. Multidisciplinary bioarchaeology isn’t simply a matter of adding a few more columns into our databases and running the same old correlations; it requires us to think in different ways. This paper discusses the concepts, methods and processes needed for multidisciplinary bioarchaeology. Conceptually, ways for layering and combining data range along a spectrum from statistical to biographical, with a potentially productive, poorly explored zone of collective biography in between. Methodologically, every kind of data comes with its own assumptions and limitations, and a key part of multidisciplinary research is translation and establishing acceptable equivalencies and approximations needed to align them (for instance, aligning isotopic readings with “diet”, or genetic relationships with social relationships). Good practice here involves negotiation, poor

practice is more like a “smash and grab robbery”. In terms of social process, multidisciplinary bioarchaeology generates different dynamics than single disciplinary work, involving boundary objects, research brokers. It may inherently be “slow science”. It also can generate new problems, for instance unequal power relations between subfields, and multidisciplinary work can only be done in large, well-funded or centralised projects. Here too we need to develop new good practices.

2 FURTHERING A MULTI-DISCIPLINARY BIOARCHAEOLOGY: THE SYNTHESIS OF BIOARCHAEOLOGY AND ARCHAEOETHANATOLOGY

Abstract author(s): Knusel, Christopher (Université de Bordeaux)

Abstract format: Oral

Archaeoethanatology, bioarchaeology and funerary archaeology trace their origins to the last decades of the 20th century but followed parallel developmental trajectories that have tended to separate rather than unify these sub-disciplines. Despite clearly shared interests and although the first two were constructed to bridge the divide between archaeology and biological anthropology, they have tended to travel different routes, fragmenting studies along disciplinary lines and also national, linguistic and organisational ones. In order to provide synthesis with newer scientific analyses, especially biomolecular ones, a better working relationship is required. Such a relationship would provide a platform for organising joint working and permit better, more holistic, and more soundly theoretically grounded research questions that render interpretations more complete and compelling.

Archaeoethanatology and bioarchaeology offer ways to develop greater insight into funerary ritual, and both encompass funerary archaeology, with its emphasis on the grave and its constituents, as well as the study of human remains. Both also advocate for the active participation of biological anthropologists trained in archaeological methods in the excavation of human remains. Key to this approach is the adoption of standard anatomical terminology for recording the disposition of skeletal remains and the creation of a research design that involves planning for the application of archaeological scientific analyses that helps to ensure the integrity of samples. An archaeoethanatomical approach can then be implemented in the field that can be summarised in three steps: (1) field observations and recording, (2) reconstruction of the disposition of the remains at the time of their final deposition and how the accompanying funerary assemblage was placed through taphonomic analysis, and (3) interpretations of mortuary behaviours and social information more generally. This presentation outlines the advantages of this approach through the example of a challenging mortuary context from the Neolithic site of Çatalhöyük (Turkey).

3 DIFFERENCE, BEFORE AND AFTER THE GRAVE, IN NEOLITHIC SOUTHERN ITALY

Abstract author(s): Thompson, Jess (University of Cambridge) - Soncin, Silvia - Panella, Sofia (Sapienza Università di Roma) - Booth, Thomas (Francis Crick Institute) - Tafuri, Mary Anne (Sapienza Università di Roma) - Robb, John (University of Cambridge)

Abstract format: Oral

Diversity and flexibility in Neolithic approaches to food gathering and growing, marking the landscape, composing kin, and disposing of the dead, have long been observed. It has even been proposed that Neolithic lives were founded on a “politics of difference”, in contrast to the increasingly culturally restricted and codified expressions of social differentiation from the Copper Age onwards. Small-scale tribal communities in Neolithic Europe were probably oriented around a fluctuating system of collective action; while certain individuals may have occasionally gained esteem or prestige, the evidence from lifeways and burials is remarkably quiet on this front.

We track the dynamics of Neolithic lives and deaths in southern Italy by combining bioarchaeological analysis, bulk and incremental isotopic data on lifetime movements and diet, with funerary and histotaphonomic data on post-mortem treatment. People living on the Apulian Tavoliere during the early to middle Neolithic experienced frequent, short-term shifts in dietary composition as well as mobility. At the same time, funerary traditions were remarkably local and yet varied even within a single site. Incorporating published isotopic and burial data reveals only further heterogeneity, suggesting flexible approaches to subsistence based on the local climate and environment, and slow but consistent change in funerary practices. In the 6th-5th millennium BC in southern Italy, lives—before and after the grave—resisted rigid pathways.

4 DIGGING FOR NUANCE AND OPPORTUNITY IN THE ADNA MINES

Abstract author(s): Booth, Thomas (Francis Crick Institute)

Abstract format: Oral

Large-scale archaeogenetic studies of human populations in varied regions of the world have provided coarse narratives of population movement and genetic change. More recently there has been a move towards more regional and site-specific studies, particularly those which explore close biological relationships in at funerary sites. However,

larger-scale studies still contain many underreported but important regional and site-specific results which, when considered in their regional or site-specific archaeological context or alongside additional biomolecular data, serve to nuance or sometimes even contradict broader interpretations. These case studies often throw up new questions which could be effectively addressed through further targeted analyses, particularly other biomolecular methods. Here I will discuss a few such case studies from archaeogenetic studies of prehistoric Britain including questions about the origins of the Early Mesolithic Cheddar Man and the complexities of interactions between migrants, local communities, and their descendants in the Neolithic and Bronze Age. Future integrative research could be instigated through careful appraisal of archaeogenetic papers and associated supplementary materials to identify cases where detailed contextualisation and further analyses would be disproportionately beneficial to our understanding of sites, individuals, and communities.

5 NEW PERSPECTIVES FOR WOMEN'S STUDIES IN PAST POPULATIONS: SOME KEY ISSUES PRESENTED IN THE WOMENSO FAR ANR PROJECT

Abstract author(s): Goude, Gwenaëlle (CNRS) - Leduc, Guillaume (CNRS UMR 7330 CEREGE) - Rottier, Stéphane (Univ. Bordeaux UMR 5199 PACEA) - Power, Robert (University College of Dublin) - Salazar-Garcia, Domingo (University of Valencia) - Lambert, Aurore (EVEHA International) - Le Roy, Mélie (University of Bournemouth) - Gandelin, Muriel (INRAP Méditerranée) - Couvrat, Maëlle (CNRS UMR 7269 LAMPEA - Consortium, ANR WomenSOFar, <https://womensofar.hypotheses.org/category/equipe>)

Abstract format: Oral

The WomenSOFar ANR project (Individual life histories and WOMEN Status at the Onset of FARming: Bioarchaeological perspectives in the French and Mediterranean Prehistoric context) proposes to discuss the place of women in first farmers' communities by using a multidisciplinary approach. It aims at deciphering how individuals move, eat, care for and work and combines previous and new dataset on bioanthropology, biogeochemistry, bioarchaeology and archaeology. The project focuses on specific questions as: 1- Does maternal/allomaternal investment and food transfers differ according to their own experience and local subsistence economy? 2- Does parental/alloparental investment lead to female vs. male social distinction as early as childhood? Does a timing/pattern exist to get the role of "female" or "male" into these communities? 3- Why do women migrate differently from men and how does it influences their diet and its diversity? 4- Are women involved in specific activities affecting their health and morphology? Does this exist in connection with their place of origin? Does it have an impact on their diet/the emergence of their childhood socialization? The project investigates human remains and their cultural contexts from several sites located in different natural environments in France and North Africa, mainly dated to the 5th millennium BCE. Skeletal and dental records, cross-sectional geometry of long bones, multi-element isotope ratios, funerary records, dental calculus micro-remains and microbiome and kinship data will be compared. Examples of previous researches using this multidisciplinary approach illustrates the risk/gain of such study; among other things, data allowed to identify female individuals with specific life history and mobility pattern and male individuals with possible "disadvantaged" status. WomenSOFar expects to provide a new vision of the diversity and mutability of women status in Prehistoric times at the onset of major societal disruptions.

6 THE AYIOS VASILEIOS NORTH CEMETERY PROJECT: BIOARCHAEOLOGY IN THE 21ST CENTURY

Abstract author(s): Voutsaki, Sofia (Groningen Institute of Archaeology) - Moutafi, Ioanna (The M.H. Wiener Laboratory for Archaeological Science, American School of Classical Studies at Athens) - Vika, Efrossini (Ephorate of Athens, Greek Ministry of Culture)

Abstract format: Oral

In this paper, we would like to present the questions, methods and first results of the Ayios Vasileios North Cemetery project, the excavation and study of an early Mycenaean (1700-1450 BC) cemetery in Laconia, southern Greece. We will do so by focusing on the osteobiographies of two individuals, a man and a woman buried in close embrace, which have been reconstructed by combining contextual and bioarchaeological methods of analysis. The emphasis, however, will be not so much on the material itself, but on the way our approach has been shaped by the developments in bioarchaeological research in the last two decades: the constant refinement and proliferation of analytical techniques, the increasing specialization and fragmentation of the field, but also the attempts at integration of scientific methods and theoretical reflection. Our paper also has to address the different funding structures and publication cultures between the humanities and the sciences as well as the growing divide between research and rescue excavations or between well-endowed institutions in north-western Europe or North America and Mediterranean countries. Our approach and theoretical reflection also need to be placed within changes in the society around us, especially the growing polarization and the renewed significance of identity politics.

Our main argument is that our research and results are shaped by the constraints of the institutional frameworks we operate in, but also that our experiences, if shared and reflected upon, can bring about changes in these institutions and academic cultures.

7 INVESTIGATING SOCIAL HERITAGE THROUGH MULTI-DISCIPLINARY BIOARCHAEOLOGY AT ANCIENT AKSUM (50-400)

Abstract author(s): Basanti, Dil (Northwestern University)

Abstract format: Oral

This paper employs multi-disciplinary bioarchaeology to better contextualize the stelae monuments of ancient Aksum (50-400 AD) with local priorities of social heritage. Aksum, in northern Ethiopia, was the capital of an ancient polity that spread across the northern Horn of Africa and became a major power in the Indian Ocean trade. The most notable remains of the ancient capital are its towering funerary stelae and monumental tomb complexes. Today, the stelae are important cultural emblems of Ethiopian heritage. The 2018-2020 Aksum Bones Project analyzed previously excavated human remains from two stelae tombs. Isotopic signatures of ~20 bone samples suggest tomb burials represent intimate groups with similar diets that may vary by tomb. Micro-CT histological imaging revealed heavy bacterial bioerosion throughout all samples, suggesting relatively immediate burial after death. Cutmark distribution suggested remains were disinterred and cleaned soon after death. Contextualization with excavation records allows for the identification of ancient reentry tunnels for the retrieval of Aksumite bones, as well as providing a thicker description to the sequence of post-mortem steps. These data come together to reveal a history of Aksumites orienting their mortuary rituals around intimate group identities and continued access to dead members. Notably, these experiences also seem to underpin the growing symbolism of houses and ritualized doorways on Aksumite mortuary architecture – abstracting personal experience into formal symbolism. Intangible and social heritages are especially valued in northern Ethiopia, and multi-disciplinary bioarchaeology helps link the stelae to a tradition of social practice that better resonates with local and region-wide priorities. In the process, it also helps shift public portraits of death as “grim” or exotic to celebrations of community-belonging and social performance that feel more familiar to many in Aksum today.

8 THE STAGGERED TURRIFORM OF SON FERRER (MALLORCA, SPAIN), A CASE STUDY OF A MULTIDISCIPLINARY RESEARCH IN BIOARCHAEOLOGY

Abstract author(s): Salvador, Paloma (Universitat de les Illes Balears, Àrea de Prehistòria; Universitat Autònoma de Barcelona, Unitat de Antropologia Biològica) - García, Jaume - Calvo, Manuel (Universitat de les Illes Balears, Àrea de Prehistòria) - Santos, Cristina (Universitat Autònoma de Barcelona, Unitat de Antropologia Biològica)

Abstract format: Oral

The Staggered Turriform of Son Ferrer is an archaeological site located in western Mallorca (Spain) that worked as a necropolis during the Late Iron Age, also known as Postalaïotic period, (650/550-123 BC). This site has been studied for more than twenty years. During this period several kinds of analyses have been performed, namely, pottery studies, paleobotanic and faunal remains analysis, radiocarbon dating, among others, in order to become acquainted with these past societies. The information provided by all these analyses helped us to deepen our understanding of Postalaïotic society customs regarding funerary practices, how they managed their resources or related with other peoples. However, questions such as: Who was buried there? Were they related? Where these individuals come from? were issues that needed to be addressed with the analysis of the individuals themselves. Hence, a new project that includes both a morphological and metric analysis and ancient DNA analysis of the human remains have been developed in order to shed light on those questions.

We intend to present the current results of each part of this project in which archaeology and biology work together to broaden our understanding of Son Ferrer human group and Postalaïotic period. Thus, we will address issues such as their geographic origins and matrilineal kinship; the demographic profile of this group and also, as the 79% of the individuals are non-adult, we will be able to discuss the results regarding age and sex assessment, among others. Furthermore, we intend to discuss the challenges of integrating biological information in the archaeological research.

9 VIOLENCE (?) IN THE HALLSTATT PERIOD: BIOARCHAEOLOGY OF HUMAN SKULLS FROM TWO SITES OF THE URNFIELD CULTURE IN POLAND

Abstract author(s): Biernacka, Katarzyna- Konczewski, Paweł (Wrocław University of Environmental and Life Sciences) - Pokutta, Dalia (ARL University of Stockholm; Instytut Archeologii Uniwersytet Rzeszowski) - Martewicz, Katarzyna (Independent researcher) - Kwiatkowska, Barbara - Szczurowski, Jacek - Karykowska, Aleksandra (Wrocław University of Environmental and Life Sciences) - Soliński, Daniel (Regional Specialist Hospital, Research and Development Center, Wrocław)

Abstract format: Oral

One of the phenomena of life and death of communities living in Central Europe during the Late Bronze Age-Early Iron Age is the human remains discovered on settlements in contexts indicating their non-grave character. They are characterized by the abandonment of cremation, which was common at the time, and the defragmentation of bodies perimortem. These finds are explained as evidence of conflicts or religious rituals, sometimes taking the form of anthropophagy. Those interpretations have also been proposed for human skulls found in Lusatian culture sites (a Central European variant of urnfield cultures) located in Wiązów and Siechnice, in southwestern Poland. To verify this hypothesis, the skulls were given in-depth studies: tafonomics and archaeological context, osteology, CT scan and isotope analysis. For the skull from Wiązów, digital facial reconstruction was also done.

The results indicate that the skull discovered in Wiązów belonged to a adolescence female (juvenis), and the skull fragment from Siechnice seemed to belong to a child (age class infans II). Radiocarbon analysis shows that these people died in the B-C Hallstatt period. The woman found in Wiązów (or her body) was decapitated. A skull fragment of a child from Siechnice has cut marks, and deposition in a trash pit with post-consumer animal remains would suggest anthropophagy. A depression resulting from a healed trauma was also noted on the frontal bone of this individual. Strontium isotope analysis of the Wiązów woman's skull suggests her local origin. The drastic treatment of the two bodies indicates the connection between their deaths and the violence against them. However, given the lack of unequivocal evidence of violence and considering culturally and chronologically similar findings from Central Europe, one may ask whether the remains found in Wiązów and Siechnice (in particular) may be evidence of endocannibalism rituals?

10 BIOARCHAEOLOGY OF THE DUTTLENHEIM NECROPOLIS (800-510 BC, EIA, FRANCE): FROM THE INDIVIDUAL STORY TO THE FUNCTIONING OF THE GROUP

Abstract author(s): Fischer, Claire-Elise (University of York) - Seguin, Guillaume (EVEHA) - Reich, David (Harvard University) - Armit, Ian (University of York)

Abstract format: Oral

The Hallstatt necropolis of Duttlenheim, recently exhaustively excavated, has yielded an exceptional funerary assemblage associated with two pits from the end of the Bronze Age: one circular, and the other elongated of the langgraben type, which is much rarer and is likely to have had a cult function. The archaeological material is dominated by local ornaments and pottery, and only one female wore a pair of bracelets not previously documented in the region.

The excavation revealed 52 individuals: 44 adults and eight juveniles. Osteological analysis indicated an over-representation of females. From an anthropometric point of view, one group of females are very homogeneous and could constitute a family group. Most of the individuals were buried supine, four female individuals were buried prone, one of whom had developed tuberculosis (also known as Pott's disease).

As part of the COMMIOS Project, we conducted aDNA analysis on all individuals where sampling was possible (n=40). The results showed excellent preservation of aDNA, with 87% of the samples yielding meaningful data. Interestingly, the genetic results contrast with the osteological data in demonstrating a more balanced sex ratio, and include one robust, and osteologically sexed as female, individual with an XY genetic profile. The data also revealed 3 families, composed of 2 to 6 individuals. The data places the Duttlenheim community within the local context, allows the discussion of genetic diversity of the group and significantly increases the number of analysed EIA individuals in the region. Finally, the analysis of the pathogens allows us to document, for the first time, the presence of tuberculosis in Alsace during the Iron Age.

11 VARIATION ABOUND: A MULTIDISCIPLINARY LIFE-COURSE APPROACH TO LEPROSY IN MEDIEVAL ENGLAND

Abstract author(s): Blom, Alette (Department of Archaeology, University of Cambridge; School of Archaeology and Ancient History, University of Leicester) - Inskip, Sarah (School of Archaeology and Ancient History, University of Leicester)

Abstract format: Oral

Leprosy/Hansen's Disease has been affecting humankind for millennia, and has been described and studied for centuries due to its characteristic and debilitating lesions. Most recently, modern medical research has shown that early life circumstances, socioeconomic status, diet and overall health can influence infection risk, and this can subsequently influence the risk of comorbidities and alter social status in many cultures. Meanwhile, historic approaches have shown that attitudes toward the disease have changed throughout history, influencing the medical, social and legal treatment of those considered to have the disease. While leprosy has become increasingly popular in (bio)archaeology in recent decades and a large amount of case studies have been published, few have considered individual life history approaches incorporating the conditions raised by historian and medical professionals in order to create socially contextualised life-course reconstructions to better understand leprosy, and its impact on people and societies, in our past.

This paper discusses the results of a multidisciplinary approach to reconstruct the variable narratives of people with leprosy in medieval England, and builds on the analysis of 383 skeletons from varying sites. The life course reconstruction of 52 individuals is complemented by burial data, early and late life carbon and nitrogen isotope values, ancient pathogen DNA and osteobiographical data. This approach has allowed a better understanding of the impact of early life circumstances on leprosy infection risk, the social and biological consequences of leprosy infection, and how physical and social (dis)ability and treatment has created varying life outcomes of those affected by the disease.

12 STAYING HEALTHY - AN ANALYSIS OF DIETARY DISEASES AND SOCIAL STATUS IN THE MIDDLE AGE TOWN OF TRONDHEIM AD 1000-1600

Abstract author(s): Christophersen, Axel (Norwegian University of Sciences and Technology, Departement of Archaeology and Cultural History, University Museum)

Abstract format: Oral

The presentation takes as a point of departure one of the session's 4 described trajectories of development within bioarchaeology, namely how skeletal investigations can study health and activity, and how this can illuminate how people experienced different life risks and social opportunities. The Norwegian Research Council founded project "Medieval Urban health: From private to public responsibility AD 1000-1600" studies i.the food access to the medieval town of Trondheim, based on pollen and macrofossil analysis, and the possible link to climate change, based on palaeoclimatological data (year-ring data) from archaeological contexts. The result from this study has been used to study damages from insufficient nutrition on skeletons from two medieval cemeteries, one located in an elite environment including a monastery, the other in a craft quarter in the outskirts of the town. The results from this study gave interesting results concerning how different quality (and quantity) of food intake during the early ages influence the general health status in different neighborhoods in the town. This raises concerns regarding the quality of the diet for individuals and groups within the urban population: To what extent was health dependent on social and economic inequality, and was anything done to prevent an all too unequal distribution of a vulnerable and at times unpredictable supply situation of food to the town? The question is of great interest to the overall health historical problem about how and when the town's authorities took initiative to improve public health condition. The study is based on a wide range of interdisciplinary data and methods and have a potential to throw light over the emergence of early biopolitical considering in the medieval town of Trondheim, Norway.

13 MAKING CONNECTIONS IN MEDIEVAL BRITAIN AND IRELAND: USING SENSITIVE HAPLOTYPE APPROACHES TO REVEAL DISTANT GENEALOGICAL TIES AND NON-LOCALS WITHIN CEMETERIES

Abstract author(s): McCann, Maeve - Cassidy, Lara (Trinity College Dublin)

Abstract format: Oral

The concepts of ancestry and kinship are major anchors of human identity and the principle organising factors of many past societies. Crucially, perceptions of shared ancestry may or may not align with true genealogical history. Thus, ancient genomes have the power to provide deeper understanding of the diverse manifestations of gender, kinship and social organisation in the past. However, the most popular methods employed by the field make use of allele-sharing statistics to identify genetic relatives and individuals of non-local ancestry. These approaches lack resolution to identify distant relatives (>5th degree) or non-local individuals from closely related populations.

Here, we demonstrate the power of haplotype-based analysis to reveal fine-scale genetic histories of ancient communities and individuals. Specifically, we implement a multi-step imputation and phasing pipeline to maximise the information potential of ancient genomic datasets and apply IBD-segment-sharing and chromosome-painting techniques to these. We present several case studies from Late Iron Age and Medieval Britain and Ireland, a period of increasing mobility and urbanisation across Europe, as well as reduced genetic differentiation.

We identify individuals within cemeteries whose ancestry derives from different regions of the islands and combine this with burial information and isotopic data, to reveal the life histories of migrants and their descendants. This includes women who travelled long distances within their lifetimes, such as an older individual buried at Ranelagh, Co. Roscommon c. 1000 AD, who likely came from an urban center in the north of England. We also explore kinship networks within cemeteries, including the Kirk of St. Nicholas in Aberdeen. This also provides an additional avenue to identifying ancestral outliers, based on the presence or absence of distant relatives. Through the implementation of these sensitive approaches we are able to reconstruct the biographies of individuals and families that otherwise would have been lost to history.

14 **BREAKING UP A MONOLITH. EXPLORING THE DIVERSE LIFE EXPERIENCES OF THE „DISENFRANCHISED“ IN THE EARLY MODERN CITY OF BASEL (SWITZERLAND)**

Abstract author(s): Rindlisbacher, Laura (Integrative Prehistory and Archeological Science, University of Basel; Archäologische Bodenforschung Basel-Stadt) - Flatscher, Elias (Kunsthistorisches Institut, Universität Zürich; Archäologische Bodenforschung Basel-Stadt) - Gerling, Claudia - Pichler, Sandra (Integrative Prehistory and Archeological Science, University of Basel)

Abstract format: Oral

Archaeologists investigating historical periods are simultaneously gifted and cursed by the amount and variety of written records, both enriching and complicating analysis. Especially when entering the so-called Modern era, one is confronted with narratives that directly impact our own society and thus result in a multitude of biases which we need to address in our research. The bioarchaeological analysis of human remains offers a way to highlight individual and societal life experiences also of those segments of societies who often find no mention in the written records.

The excavation of an Early Modern skeletal sample discovered underneath the “Stadtcasino” concert hall in Basel (Switzerland) offered the opportunity to study a segment of the urban population who were to some degree excluded from socio-political participation. During this period, the majority of Basel’s population lived in precarious economic conditions, covering a spectrum from low income work and occasional begging to deepest poverty. The intersectionality influencing the social status - and related social participation - of the members of Basel’s middle and lower classes affected the health status of the persons concerned in many ways. This also applies to their ability to survive crises e.g., the recurring plague and typhus events of the 16th and 17th centuries.

By combining historical information on social factors with a multidisciplinary bioarchaeological life-course approach various aspects like diet, trauma patterns and childhood stress can be analysed. With this broad lens we can attempt to identify diverse groups of women and men who seem to have grown up with differential access to food and/or communal support during their life course. These diverse life histories enable a more nuanced interpretation of groups, which have - until now - often been addressed as quite monolithic (e.g., “lower” vs. “upper” classes) despite the broad spectrum of experiences they actually encompass.

A. **A PEEK INTO THE LIFE AND DEATH OF HISTORICAL INDIVIDUALS WITH UNKNOWN CULTURAL BACKGROUND FROM ROMANIAN ARCHAEOLOGICAL CONTEXT**

Abstract author(s): Rusu, Ioana (Molecular Biology Centre, Interdisciplinary Research Institute on Bio-Nano-Sciences, Babeş-Bolyai University) - Popescu, Octavian (Institute of Biology Bucharest of Romanian Academy) - Bodolică, Vitalie (Museum of National History and Archaeology) - Dobrinescu, Cătălin (Museum of National History and Archaeology) - Kelemen, Beatrice (Department of Molecular Biology and Biotechnology, Faculty of Biology and Geology, Babeş-Bolyai University)

Abstract format: Poster

Human skeletal elements unearthed from archaeological contexts remain a promising resource to reveal or revise various aspects of life, death, and relationships among ancient individuals and populations. Continuous technological improvements in the analysis of ancient biomolecules have paved the way to a refined understanding of our past. However, new facets of the story continue to emerge as more and more unique osteological collections are being analyzed.

This study aims to reconstruct the biological profile of a past population discovered in a large multi-phase archaeological site in southeastern Romania by integrating archaeological, anthropological, isotopic and genetic data to gain a more meaningful picture.

Even though the funerary complexes were initially dated to the medieval period according to archaeological attributes, the results of radiocarbon dating place the necropolis in the pre-modern era and suggests it has been used only for few generations. A significant proportion of non-adults were identified in the screened assemblage indicating a high mortality rate in early childhood, a fact that might be related to their exposure to systematic infections. Preliminary results indicate that some of the analyzed individuals might have suffered from malarial infection, but despite a multidisciplinary approach to address this issue no indisputable evidence could be produced.

More insights regarding kinship, migration patterns, paleo-epidemiology, and regional shifts will be brought to light when integrating genetic data.

Acknowledgment. This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-III-P1-1.1-PD-2021-0634, within PNCDI III.

B. ECHOES OF URBANITY. OSTEOBIOGRAPHIC NARRATIVES AND THE LIFE COURSE IN THE ANCIENT CITY OF THESSALONIKI

Abstract author(s): Aidonis, Asterios - Ganiatsou, Elissavet - Souleles, Angelos - Korelidou, Maria - Bantavanou, Panagiota (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace) - Protopsalti, Sultana - Tzevreni, Stavroula - Vasileiadou, Stela - Konstantinidou, Krino (Ephorate of Antiquities of Thessaloniki City, Ministry of Culture and Sports) - Papageorgopoulou, Christina (Laboratory of Physical Anthropology, Department of History and Ethnology, Democritus University of Thrace)

Abstract format: Poster

The reconstruction of individual lives by multidisciplinary approaches has become an active topic in the field of bioarchaeology. Our study integrates a toolbox of bioarchaeological methodologies to investigate urban life in ancient Thessaloniki. The city was founded in 315 BC and due to its strategic position turned into a significant economic-political hub and a multicultural metropolis, continuously retaining its urbanity. We analyzed human remains excavated during the construction of the city's metropolitan subway, spanning from Hellenistic (323 BC) to post-Byzantine period (15th c AD). We highlight the city's history through the reconstruction of individual biographies and population secular trends. Using osteological, isotopic, aDNA, and archaeological data, we build osteobiographies representing the Hellenistic, Roman, and Byzantine chrono-cultural periods. To reconstruct the secular trends of the population, we study the population structure, diet, and living conditions of inhabitants. Population differences among chrono-cultural groups were investigated through the morphological variation of the temporal bone with the use of geometric morphometrics. A multi-tissue isotopic approach was employed to reconstruct the infant and adult diets of 240 individuals. The living conditions of the population were assessed through skeletal indices of stress including stature, body mass, linear enamel hypoplasia, and trauma. Our study aims to investigate how the changing urban environment impacts the living conditions of the population and point out the significance of ancient humans as central agents in archaeological narratives.

Funding: This research has been co-financed by the European Regional Development Fund of the European Union and Greek national funds under the call RESEARCH – CREATE – INNOVATE (project acronym: ECHOES T2EΔK-00152), and by Greece and the European Social Fund through the Operational Programme: Human Resources Development, Education and Lifelong Learning, Act: “Enhancing Human Resources Research Potential by undertaking a Doctoral Research, subaction 2”, implemented by the State Scholarships Foundation (IKY) (MIS 5113934).

507 MODERN QUARRIES AND ARCHEOLOGY: PROTECTION ISSUES, REGULATIONS, METHODOLOGIES, IMPACT, SUSTAINABILITY

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Marino, Sara (Researcher in Methodologies of Archaeological Research, Department of Sciences of Antiquity, Sapienza University of Rome) - Kelany, Adel (Director of Archaeological Awareness Department in Aswan Antiquities Office, Supreme Council of Antiquities. Ministry of Tourism and Antiquities)

Session format: Regular session

The recent and historical development of quarries brought significant impacts on landscapes, biodiversity and non-renewable resources, including archaeological heritage. The analysis of the past and present impact of modern quarries, and the assessment of the risk they pose, are not secondary issues in the holistic protection of Cultural heritage. According to the directives and charters for environmental and archaeological protection and sustainable development in Europe, quarrying must be compatible with the prospects of an economy attentive to ‘green’ issues, taking care to enhance and strengthen cultural resources and landscapes. The issue is also reported as problematic by UNESCO, e.g. for the Syrian site of Crac des Chevaliers and Qal’at Salah El-Din, and is evident in many other cases worldwide.

Furthermore, the impact of the continued exploitation of quarries destroys ancient quarry cliffs, relevant for the study of past architectural practice.

The session aims to discuss the different European and non-European regulations, the different approaches and methodologies to tackle the problem of the relationship between quarries and archaeology. Furthermore, we want to consider the best protection practices adopted from the perspective of sustainable heritage planning. This session intends to host papers presenting case studies derived from preventive archaeology, but also documented through non-direct surveys on the landscape, such as aerial and satellite remote sensing, or through archival and bibliographic documentation. The goal is to understand how the problem is managed globally and if best practices and shared strategies can be identified and applied, as methodological and operational trajectories.

ABSTRACTS

1 QUARRIES AND ARCHAEOLOGICAL HERITAGE: A CONTRASTED PATH FROM DISCOVERY TO REJECTION

Abstract author(s): Vanzetti, Alessandro (University of Rome „La Sapienza“)

Abstract format: Oral

Quarries have been very important for archaeological discovery, for the recovery of materials and for the links with geological knowledge. For example, they have been essential partners in the understanding of the antiquity of the Earth and of humans, during the 19th century CE, e.g. in French Palaeolithic research. They have produced masses of artefacts and some contextual data for pre- and protohistory, such as the fat-earth quarries in Northern Italy, in the Bronze Age terramara district, in the same 19th century. They have also allowed archaeologists to observe the deep stratigraphies of landscape, as occupations and geological and environmental interaction, during the 20th century. In more modern times, they have also forced extensive research in some landscapes, extracting from the ground some of the best (up to now) archaeological data for an integrated reconstruction of past human systems, such as in the Traisental, Austria.

Anyway, quarries are clearly destructive, from a modern point of view, and they tend to force recovery in a way that is not adequate for today required detail in archaeological excavations. And in many cases quarries are simply destructive, without any chance of control and of the gain of useful information. For these reasons, opposition and rejection of quarrying is the dominant present mood.

This transformation in the relation between archaeology and quarries is relevant, and interesting neither only for the acknowledgement of the improved quality of archaeological data validation, nor for the psychological-like relations between “discovery “ and “growth“ (of the discipline), but it is relevant for the path of archaeology, walking out of objects to contexts.

This contested relation will be the subject of the presentation.

2 THE STRUGGLE FOR SURVIVAL, ARCHAEOLOGICAL SITES AND MODERN QUARRIES: MODELS OF SUCCESS AND FAILURE FROM EGYPT

Abstract author(s): Kelany, Adel (Supreme Council of Antiquities in Egypt - SCA)

Abstract format: Oral

The expansion in quarrying and mining of Egypt’s natural resources has become a necessity and an urgent matter in Egypt recently. Despite the importance of these natural resources in advancing the economy, modern extraction methods have a very negative side, which is the destruction of nearby archaeological sites, in particular vital evidence relating to ancient quarrying and mining that can span thousands of years.

The balance between the extraction of raw materials and the preservation of archaeological sites is a very difficult balance which requires a lot of archaeological work and cooperation between government agencies and the owners of private and public mining companies.

In 2006, the Supreme Council of Antiquities in Egypt established the first department specialized in studying the sites of ancient quarries and mines under the name: Ancient Quarries and Mines Department. This department has specialized in studying and recording the sites of ancient quarries and mines spread along the Nile Valley and the neighboring desert as a continuation of the ‘QuarryScapes’ EU funded conservation project. Balancing the imperatives of modern extraction of raw materials with the preservation of fragile archaeological sites such as quarries and mines (which are mostly located in remote desert areas), has led to development of numerous strategies of engagement with a range of stakeholders.

This paper will present models of success and failure that faced this administration in conserving archaeological material close to modern mining sites. It also analyzes the role of local laws and regulations in facilitating the protection

or destruction of archaeological sites, in addition to the difficult situation of that antiquities protection offices can encounter in their work.

3 ,A BLAST FROM THE PAST' - HOW PAST EXPERIENCES OF DEALING WITH ARCHAEOLOGY WITHIN QUARRY SITES HAS INFORMED TODAY'S APPROACH

Abstract author(s): Logue, Edith (Department for Communities Historic Environment Division)

Abstract format: Oral

This talk will discuss the impact of modern quarrying on archaeology and the built environment in Northern Ireland, the issues around protection and regulation in the past and how these are currently managed. The aim is to outline former difficulties faced by archaeologists and heritage professionals dealing with the quarrying industry and show how these have led to stronger planning legislation, better regulations and guidance and a more professional approach to archaeological protection and mitigation. This talk will also highlight the work that DfC Historic Environment Division, in partnership with the Mineral Products Association of Northern Ireland (MPANI) has undertaken in recent years to develop a cordial working relationship that produces positive results for both archaeology and the quarrying industry. This talk will also include an overview of what quarrying will look like in the future within Northern Ireland with a move towards a more sustainable industry and what impact will now methodologies and working practices have on our archaeological and built environment.

4 ARCHAEOLOGY IN MODERN QUARRIES OF THE UK: PLANNING POLICY, METHODOLOGIES AND IMPACTS FROM THE PERSPECTIVE OF A SMALL-TO-MEDIUM-SIZED ARCHAEOLOGICAL UNIT

Abstract author(s): Braun, Brandon - Guagenti, Alessandro (John Moore Heritage Services)

Abstract format: Oral

Material extraction at modern quarries radically alters the landscape, impacting not only the natural environment, but also historical and cultural environment. By its very nature, quarrying permanently removes the archaeological horizons in which any extant cultural features exist. In the UK, this risk of loss is mitigated by legislation and policy guidance as part of the planning process for any project, primarily through the National Planning Policy Framework (NPPF), which grew out of the PPG16 policy introduced in 1990, based on the 'polluter pays' principal. The NPPF was originally published in 2012, was updated in 2019 and is currently under review as of 2023.

Over that same period in the last decade, John Moore Heritage Services (JMHS) has undertaken more than a dozen developer-funded projects, ranging from desk-based assessments to various stages of fieldwork, at several quarry sites around England. Several on-going projects are distributed throughout the archaeologically significant areas of the Upper and Middle Thames valley, a number of which are presented here as case studies. This paper analyses these projects, examining how the methodologies and research aims satisfy the current requirements of the NPPF and how this has changed over time. It also addresses the importance of projects at quarry sites for a small-to-medium sized archaeological units such as JMHS, reflecting on the challenges posed and opportunities offered to the company and the archaeologists employed within them. At the same time, the paper emphasizes the relative strengths of heritage companies such as JMHS in the context of modern quarries, such as their ability to build durable professional relationships or to quickly adapt time scales and methodologies as needed for site/project specific circumstances. Finally, the paper discusses issues regarding the relevance of archaeology within the wider industry it is embedded within, in the context of quarry excavations.

5 CASALE RIZZO, HISTORY OF A DEFACED HERITAGE: ASSESSMENT OF ARCHAEOLOGICAL AND ENVIRONMENTAL DAMAGE

Abstract author(s): Amodio, Francesco (Stadt Zürich)

Abstract format: Oral

The archaeological site of Casale Rizzo (Corigliano Calabro, Italy), from the 1960s onwards, was affected by surface researches, including the first ones in the 1960s (by the Quilici) and later in the 1970s by the then Ufficio Scavi di Sibari (P.G.Guzzo). It was only in 1980 that the research group of the University of Rome La Sapienza conducted systematic research that led to the identification of a concentration of archaeological materials near the S-E slope, chronologically framing the site between the phases of the medium and recent Bronze Age. It was between 2004 and 2006 that radical earthworks/excavations, carried out in the vicinity of the N-E slope, brought to light other ceramic materials of the Protohistoric period and a bronze pin with an ornithomorphic protome head (1) recovered by Francesco Amodio. What has been carried out so far at Casale Rizzo over the years only confirms the presence of an archaeological deposit of significant importance, the archaeological potential of which has been known in the literature for over 50 years but, nevertheless, the area has been continuously exposed to irreversible risks since the construction of the provincial roads 252 and 197, which have impaired part of the N-E slope, and by the extensive

damage caused by the quarrying activities which, in the following years, have irreversibly compromised the morphology of the slope, thus permanently erasing much of the archaeological stratigraphy. These activities in fact, in addition to causing extensive damage and losses, have made the soils of the slopes extremely unstable, producing largely unpredictable long-term effects.

6 QU&HERI (QUARRIES AND HERITAGE) PROJECT: MULTIDATA ANALYSIS AND ARCHAEOLOGICAL RISK EVALUATION IN CENTRAL-SOUTHERN ITALY

Abstract author(s): Marino, Sara (Sapienza University of Rome) - Dore, Nicole (NAIS Nextant Applications & Innovative Solutions S.r.l.)

Abstract format: Oral

This paper presents the preliminary data of the QU&HERI project, focused on Lazio, Calabria, and Sicily promoted by the Sapienza University of Rome, in collaboration with the Italian Ministry of Culture (regional Offices for Cultural Heritage). The project's goal is to map historical, recent, and current quarries; multidata analysis is then performed, looking forward the mitigation of the archaeological risk, by keeping respect of extractive quarries. In fact, in central-southern Italy, cases of archaeological, paleontological, environmental contexts destroyed or heavily damaged by modern quarries are well-known. Anyway, many cases are uncertain or unknown, also because the archaeological legislation may hinder precise protection activities. It means that the total or partial destruction of archaeological landscapes is a strong risk. Our multidata approach to the problem seeks to provide a clearer picture: as first activity, we superimposed in a GIS environment the bibliographic and archival data to the multitemporal satellite analyses carried out both to monitor and to reconstruct the destroyed archaeological landscapes. A multitemporal analysis was performed over the homogeneous landscape units impacted by quarries. Contexts impacted or destroyed by quarry activity, can in fact gain relevant inputs from the multitemporal backward analysis of aerial images and large-scale topographical and technical maps, with the goal of reconstructing entire portions of the current invisible archaeological landscapes. A change detection analysis of the multitemporal data is presented, based on some contexts of northern Ionian Calabria, realised thanks to the collaboration with NAIS S.r.l. Both open access optical satellite images and commercial VHR images, were used. High-resolution images and multitemporal data are required for an evaluation of the quarries' impact over the territory: in fact, the frequent spread of unauthorized quarries of small size and short extraction periods is difficult to be detected, and only high resolution and high-quality analyses can provide satisfactory results.

7 AUTOMATIC SATELLITE-BASED DETECTION AND MONITORING OF QUARRYING ACTIVITIES IN HIGH-RISK ARCHAEOLOGICAL AREAS OF SICILY

Abstract author(s): Guarino, Giuseppe (University of Bologna) - Brucato, Alessia (University of Bari) - Tapete, Dedato (Italian Space Agency) - Masini, Nicola (Institute of Heritage Science - National Research Council of Italy)

Abstract format: Oral

Satellite imagery has been used extensively by many archaeologists to explore and monitor remote and hard-to-reach historical contexts which are, now more than ever, at greater risk of disturbance by calamitous events and human activities. The main causes of the irreversible loss of our historical and natural heritage are urban sprawl, intensive land use by agricultural and industrial development, effects of climate change, political instabilities and intentional looting activities. Among these, the increasing expansion of mining sector is one of the most relevant threats, threatening cultural and natural landscape worldwide. This is especially true in Sicily (Italy), where the territory is rich in limestone and such operations may happen despite regulations, regulatory framework and policy enforcement. With this contribution we would like to present a remote sensing-based workflow for the identification and monitoring through time of the quarrying activities in central Sicily, where many relevant historical contexts are exposed to this risk. Thanks to the variety of Open Access satellite repositories archives of multitemporal and multisensory images and numerous Free Libre Open-Source Software, in 2022 we successfully applied Machine Learning algorithms (non-parametric supervised classification with Random Forest Classifier) on multispectral satellite images (Copernicus Sentinel 2 Level 2A) covering the entire territory of Sicily. The classification obtained showed many active quarries near high-risk archaeological areas. Now, thanks to the collaboration with the Italian Space Agency and the National Research Council of Italy, we are focusing our work on multitemporal composites of overlapped images from Multispectral and SAR satellite datasets (Copernicus Sentinel 2 and 1, COSMO-SkyMed), aiming to a more detailed and diachronic perspective on this threat near specific sites. As done in the first phase of the research, the study and results will be performed and validated using QGIS and Google Earth Engine.

A. ARCHAEOLOGY AND QUARRIES - CASE STUDIES OF CONTRIBUTION OF GEOPHYSICAL MEASUREMENTS AS A PART OF PREVENTIVE ARCHAEOLOGY IN CZECH REPUBLIC

Abstract author(s): Krivánek, Roman (AU - Institute of Archaeology of the Academy of Sciences of the Czech Republic, Prague)

Abstract format: Poster

The Czech Republic has long been among the significantly industrialized countries in the Central European region. New social, but also economic changes and plans often affected many archaeological sites and large parts of the landscape. Extensive brown coal mining has continued here for many decades, changes in infrastructure and communication networks have initiated a boom in the mining of various building materials from stone to limestone to gravel and sand materials. The establishment and expansion of mines and quarries often irreversibly changed the landscape and the condition of many archaeological sites. Examples of timely applications of non-destructive geophysical measurements in the vicinity of quarries can also demonstrate effective procedures both for the implementation of rescue archaeological research and for changes in the demarcation of undisturbed parts of important immovable archaeological monuments.

A magnetometer survey at the Vražkov, Litoměřice district confirmed the continuation of a prehistoric polycultural burial ground in the eastern vicinity of the previously excavated sand quarry and initiated a new project archaeological investigation of the preserved part of the long Eneolithic burial mound. An extensive geophysical survey of the polycultural prehistoric and early medieval hillfort of Plzeň-Hradiště, district of Plzeň-město contributed to the definition of the extent of the old and already buried sand quarry inside the protected area of the site as part of the systematic archaeological investigation of the site's fortifications. A systematic survey of the inner part of the prehistoric and medieval hillfort in the Hostim, Beroun district provides a basis for the site protection of the previously partially disturbed by limestone quarries. Extensive surveys with a magnetometer at the Libkovice/Marianske Radčice, Most district in the forefield of the brown coal mine greatly streamlined the rescue archaeological research of the relics of the anti-aircraft defense firing position from the 2nd world war.

509 EMBODYING GENDER, PROBLEMATISING SEX: WEAVING TOGETHER THEORY AND METHOD IN THE EXPLORATION OF BODILY DIFFERENCE

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Peacock, Taylor - Thompson, Jess (Department of Archaeology, University of Cambridge) - McGuire, Erin (Department of Anthropology, University of Victoria)

Session format: Regular session

Tension is an inherent feature of (bio)archaeological studies of past bodies and identities. While sex estimation of the skeletal body is routine practice, whether it's morphologically or biomolecularly estimated, situating the skeletal body and the individual in a gendered world has proven challenging. Increasingly, critiques of how we approach skeletal bodies and identities have emerged alongside new theoretical applications in gender archaeology. Post-modernism, intersectionality, queer theory, and insights from new materialism and posthumanism, have all demonstrated ways we can traverse the gender landscape of the past. Alongside this, recent research in bioarchaeology and forensics has problematized sex estimation by bringing to the forefront the exclusion of non-binary and transgender individuals, as well as presentist notions of sex/gender and their application to archaeological contexts. Yet, the gulf between more-than-binary approaches to gender in the past and the practice of sex estimation in osteology remain.

In this session, we aim to bring together bioarchaeologists (who may be or more less theoretically-minded), social archaeologists, and other practitioners concerned with locating more-than-binary gender in past worlds and challenging essentialist notions of sex/gender in the past and present. We are interested in parsing the ways that osteological analyses and praxes, including methods of sex estimation, talk with and against recent and emerging discourse on gender identity and bodily difference. Papers which review the field, theoretical developments, or specific case studies from any period or region are invited. In connecting methods with theory, we aim to bridge the gap between theoretical critique and method, and in doing so find new ways of approaching gender, bodies, and bodily differences in the past.

1 WORKING TOWARDS A NON-BINARY APPROACH FOR ESTIMATING SEX FROM SKELETAL REMAINS

Abstract author(s): Albanese, John (University of Windsor; Simon Fraser University) - Reid, Sydney (University of Windsor) - Sierra-Serrano, Elena (Simon Fraser University)

Abstract format: Oral

Just as gender is considered a social construct, sex must be considered a biological construct. Sex can be defined using various biological frameworks: genetic, hormonal, anatomical, phenotypic, physiological, etc. For example, using chromosomal data, there are at least five sexes (X0, XX, XY, XXY, XYY) that occur in *Homo sapiens* at frequencies that are consistently measurable. Changing the biological framework will change the number of sexes and who is grouped into a given sex. Even when focusing only on skeletal variation, individuals are allocated to different groups when using different criteria. Within any given sample of humans, all the data have always shown that skeletal variation is continuous and does not fall into two discrete sexes; the number of categories for assessing variation varies with each approach for estimating sex; and allocation of specific individuals varies with the constructed categories, the skeletal elements assessed and the classification criteria. Furthermore, on an individual level, any one person will manifest a mosaic of traits, and these traits have been ascribed maleness and femaleness. A binary approach to sex limits our understanding of human skeletal variation, undermines the identification of unknown individuals in forensic contexts, constrains our understanding of past populations, and perpetuates harmful stereotypes about sex and gender. In this paper we deconstruct existing sex estimation methods as the critical steps to re-constructing a non-binary approach to sex estimation that will provide a better understanding of variation in *Homo sapiens* in the past and present.

2 HOW DO WE KNOW WHAT WE KNOW? A SYSTEMATIC ANALYSIS OF SKELETAL SEX ESTIMATION AND AMBIGUITY IN PUBLISHED STUDIES

Abstract author(s): Peacock, Taylor (Department of Archaeology, St. John's College, University of Cambridge)

Abstract format: Oral

In bioarchaeology, the current standard practice is to assign a binary sex estimation category to an individual as part of their skeletal profile, placing them into either “male,” “female,” or “intermediate.” From there, bioarchaeologists compare the differences between estimated sex categories. Feminist theorists, however, argue that the routine practice of sex estimation creates monoliths of sex/gender identities and overweights the importance of sex/gender for past people. To date, no studies have examined how bioarchaeological literature reports sex estimation data. Therefore, the current study explores how papers from six journals, across five years, report sex estimation, whether differences between the ‘sexes’ are compared, and how studies engage with intermediate individuals. Preliminary results from one journal (n = 121 articles) found that in articles where the sex estimation of the individuals was reported (n = 81, 67%), differences between the estimated sexes were not tested in 58%. Furthermore, 58% of articles (47/81) did not report any intermediate individuals and 14/81 reported either removing the individuals from the dataset or excluding them from sex comparisons. The results indicate that, as Agarwal (2012) found, sex estimation is reported even when not the focus of the study or the results. This focus on sex estimation has the potential to close us off from other forms of interpretation and other axes of difference. In doing so, we assume that the estimated sex is one of the essential features of an individual and their experience in the past. The absence of intermediate individuals also suggests a focus on the “correct” answer, supported by the rise of biomolecular and paleo-proteomic methods for sexing individuals. In assigning individuals to such binary categories, we cement a past that is focused on binary individuals rather than considering more complex identities and experiences in the past.

3 CRITICAL APPROACHES TO BIOCHEMICAL ANALYSES OF SEX: Y IT MATTERS

Abstract author(s): Shaw, Heidi - Gowland, Rebecca (Durham University) - Geller, Pamela (University of Miami)

Abstract format: Oral

Within the past decade, the advent of biomolecular methods of sex estimation (i.e., aDNA analysis and paleoproteomics) have revolutionized the way that bioarchaeologists understand the past. However, what chromosomal sex tells us about the “making of sex” within a specific culture, or how this links to gender identity or phenotypic appearance is open to question. Recent publications have highlighted the ethical and socio-political ramifications of uncritically applying biomolecular data to the interpretation of identity in past human populations. Such critiques have been particularly focused on the role of biomolecular analyses in the perpetuation of racism and colonial violence in living populations. We argue that it is imperative that we extend this critical reflection to include sex and gender identities in the past. Given the viral coverage of biomolecular analysis of sex and gender in archaeological burials we need to assimilate a greater sense of ethical accountability. We should ensure that binary data obtained from peptide and aDNA

analysis is interpreted reflexively to accommodate a range of potential sex-gender ideologies and sexual relations, as well as recognizing the limitations of what biochemical data can tell us. There are important ethical implications in how we, as bioarchaeologists, study, interpret, and disseminate studies of sex. History has taught us that our work has the potential to be used in harmful ways, which is why it is important to make room for more nuanced and theoretically informed approaches to the interpretation of biomolecular evidence for sex.

4 **COMMUNIST OSTEOARCHEOLOGY: A ROMANIAN CASE STUDY OF MARXIST-LENINIST BIOLOGICAL DETERMINISM**

Abstract author(s): Mower, Kate (University of California Riverside)

Abstract format: Oral

In 1920, Romanian anthropologist Francisc Rainer opened a small collection of human remains primarily for viewing by medical students in Bucharest. Over time, this became the „Francisc Rainer“ Institute of Anthropology under the umbrella of the Romanian Academy. As the institute acquired skeletal remains from archeological excavations across Romania, the remains were assigned sex, age, and ethnicity based on cranial types and other morphological structures. This process continued through the Communist period. This article analyzes the archeological articles in the Romanian archeological publication, *Studii și Cercetări de Istorie Veche*, which were published between 1950 and 1979 which include descriptions of skeletal remains found at Romanian archaeological sites. It analyzes what data was included to make sex, gender, and ethnic assignments for the remains. Archeologists worked with the paleoanthropologists at the Institute of Anthropology, but note in these articles that the Institute did not have the staff or specialists to handle so many remains as the archaeologists were excavating, and the archeologists, therefore, made these biological assignments on their own. Despite the fact that Marxist-Leninist archeological theory criticized culture-historical archeology as „bourgeois science“ -- leading to purges of culture-historical methods and theories -- often culture-historical biological constructions of sex and ethnicity led Romanian archeologists to assign sex and ethnicity of remains based on these so-called „bourgeois“ scientific methodologies. More often, though, sex and ethnicity were determined by the material culture found in the archeological context near the remains. Sex, in these cases, was not assigned by a biological determinist interpretation of the remains, but simply by the assigned gender of the material culture. This article offers the historical tension between culture-historical archaeological practices concerning sex, gender, and ethnicity and that of Marxist-Leninism as those tensions developed in Communist Romania.

5 **PROSPECTS IN ENGENDERING CLASSICAL GREECE: TOWARDS THE CONSTRUCTION OF CULTURALLY CREATED ENGENDERED BODIES AND IDENTITIES THROUGH AN INTERDISCIPLINARY APPROACH**

Abstract author(s): Vannet, Malo (Mission Archéologique Départementale de l'Eure - MADE) - Solomou, Anastasia (Independent Researcher)

Abstract format: Oral

With the development of gender and feminist theory bringing the complex and culturally determined nature of biological sex and gender to the fore (Butler 2004; Lorber 1996), archaeologists have been urged to reconsider the way in which past identities are interpreted (Jordan 2016; Harrell 2014; Arnold 2012; Costin 1996). Within the funerary arena, the spotlight has been placed on osteologists, which are considered to be the most capable in providing information regarding the sex and gender of the deceased. However, the theoretical and practical limitations of the sex-estimation methods used by osteologist and their subsequent interpretation and conflation with gender have begun to problematise researchers (Geller, 2005). This paper aims to highlight these limitations and re-formulate the questions asked by and to osteologists concerning the social identities of the deceased. Through this prism, a practical demonstration of prospective research pathways for the exploration of gender in Ancient Greece will be attempted, provided it is a greatly understudied context both with regards to osteological analyses and gender studies. This primarily includes the overview of engendered activities and lived experienced in Classical Greece. Focus will be drawn on the potential of the combination of this textual and contextual data with osteological and genetic data, with a view to creating a holistic approach to the identity and specifically the gender of the deceased, also exploring the way gender relates to and is connected to other aspects of identity, such as status, age, or ethnicity (Sofaer, 2013). This paper will also highlight deviant cases with a view to challenging the strict binary notion of gender portrayed onto Classical Greece.

6 UNSEXING THE ARCHAEOLOGICAL GAZE

Abstract author(s): Moen, Marianne (Museum of Cultural History University of Oslo)

Abstract format: Oral

For as long as archaeology has been an academic discipline, biological binary gender has assumed natural and therefore applicable to the past: historically established as determining a person's abilities and preferences, and shaping their social identity. Gender and feminist archaeology has addressed the problems this brings, offering alternative interpretations and challenging biases. And yet, it remains an engrained archaeological practice to differentiate material based on assumed gender.

When approaching for instance mortuary material, a first question asked is if the grave can be categorised as male or female. In this, osteological assessments and archaeological assumptions of gendered grave goods both play a part. As the established narrative goes, the two often correspond. And yet this is a partial truth at best: in many cases, graves determined as male and female contain other objects found with both genders, also presumably indicative of their social roles yet rarely considered equally significant to gender-diagnostic objects when ascribing identities. Very often, a considerable amount of graves contain no gendered objects at all. In other (perhaps rarer) cases, the two are directly opposed. Consequently, in order to maintain a version of the past inhabited by men (with weapons) and women (with jewellery), we need to ignore a considerable part of the actual material.

In this paper, I will lay out the case that the archaeological practice of gendering mortuary material needs addressing in two key ways. Firstly, in that the ongoing tendency to assign social roles based on sexed bodies needs further justification and cannot rely on ideas of natural gendered behaviours rooted in Eurocentric ideals. Secondly, that the primacy accorded to gender-diagnostic objects needs modification against other material goods that presumably are no less meaningful. In so doing, we may find a past less strictly binary, and more nuanced and relatable.

515 DECOLONISING PALAEOOLITHIC AND MESOLITHIC ARCHAEOLOGY: REFRAMING PRACTICES, VALUES, AND PERSPECTIVES [PAM]

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Milks, Annemieke (University of Reading, Department of Archaeology) - Grimm, Sonja (ZBSA - Centre for Baltic and Scandinavian Archaeology)

Session format: Discussion session

Archaeological practice is grounded in Western values, perspectives and practices. Communities historically labelled as hunter-gatherers have been, and still are, used as models for prehistoric know-how and organisation. Evidence of their material culture has been taken into (mostly Western) Museums and used for comparisons with archaeological material. This way analogies were made between societies with very different histories, including their immaterial behaviours and structures. These analogies often resulted in notions of evolutionary primacy, increasing racist pictures of non-Western societies as well as of the past. As non-Western individuals, perspectives, skills and contributions are still habitually understated and under-acknowledged in scientific and academic contexts, there is a need for more diversity in the scientific community to confront these racist pictures and acquire a more holistic understanding of the past.

Following a vote by our members, we propose to use the annual Palaeolithic and Mesolithic (PaM) Community discussion session at EAA2023 to facilitate a platform for case studies and conversations on 'where next' for decolonising archaeology of the 'Stone Age' (broadly construed). We seek contributions, and will welcome a wide range of formats (including but not limited to traditional presentations, case studies, interviews, film etc) covering a range of geographical, temporal, and social contexts on

- reburials
- repatriation of cultural objects and spaces
- reframing scientific projects and results
- community involvement
- decolonising the curriculum
- specific examples and suggestions to improve the diversity and inclusivity of archaeological research.

In particular, we invite contributions that centre the experiences of Indigenous students and scholars from under-represented communities and countries.

A key aim of this session is to listen, and to offer an inclusive and multidisciplinary space which amplifies under-represented voices, with the aim of a polyphonic story of our deeper pasts.

1 REFRAMING UPPER PALAEOLITHIC RESEARCH IN PORTUGAL: HOW TO OVERCOME M. HELENO'S BIAS?

Abstract author(s): Gameiro, Cristina (UNUARQ - Lisbon University)

Abstract format: Oral

M. Heleno was the director of the National Museum of Ethnology between 1929 and 1964, the professor of Numismatics and Archaeology at the Lisbon University (School of Arts and Humanities) and the director of numerous archaeological excavations throughout the country, spanning different time periods. Between 1937 and 1953 he conducted excavations at several Paleolithic sites: Vascas, Vale de Porcos, Casal do Filipe, Terra do Manuel, Terra do José Pereira, Vale Comprido, Olival da Carneira or Passal (in Rio Maior), Almoinha and Cambelas (in Torres Vedras). Nevertheless, most data concerning his works have remained unpublished. In fact, all his work had only one goal: finding the origins of the Portuguese people, and proving their European roots, against those who postulated an African origin. He believed in the correlation between an index-fossil, a culture and a race. His racist, nationalist and europeanist arguments can only be understood in the context of the Portuguese dictatorship, i.e. within a nationalist and colonial regime.

Despite the huge amount of Palaeolithic research conducted during the last thirty years – including the identification and excavation of worldwide important sites – to some extent M. Heleno's bias is still present in Portuguese Upper Palaeolithic research. For example: inland areas are less surveyed; lesser quality raw materials or uncharacteristic lithic series continue to be neglected; the use of French nomenclature and the search for parallels in Spain and France continue to be valued. This paper will discuss some procedures/measures aimed at reframing Upper Paleolithic research.

2 COLONIALISM AND THE EUROPEAN MESOLITHIC

Abstract author(s): Elliott, Benjamin (UHI Archaeology Institute) - Warren, Graeme (University College Dublin)

Abstract format: Oral

This paper responds to the multiple calls for decolonisation that originate from the session organisers, and large swathes of British and Irish society. It aims to explore various strands of decolonial practice within the context of Mesolithic archaeology; a subfield that has seen little postcolonial analysis or self-reflection to date. We go beyond the broader, established critiques of European prehistoric frameworks' colonial rootings, to identify the specific historic intertwining of Mesolithic archaeology and colonial hegemony. We argue that, far from these interactions serving as historiographical footnotes, Mesolithic research continues to reinforce these hegemonies today; both within popular culture and the academy. This plays out at the inter and intra Continental scales.

Having made these points, we then move on to explore areas of contemporary Mesolithic research practice that we believe hold previously untapped potential to challenge this dynamic, and contribute to the deconstruction of colonially-rooted power imbalances. Our focus here falls upon the ethics of ethnographic analogy, and the ontological turn within Mesolithic Studies.

3 DECOLONISING THE PALAEOLITHIC AND MESOLITHIC? SOME THOUGHTS FROM THE PERIPHERY

Abstract author(s): Porr, Martin (University of Western Australia)

Abstract format: Oral

In recent years, there has been a growing interest in the decolonisation of archaeological practices, epistemologies, representations, and research processes. While European Palaeolithic and Mesolithic archaeologists have for a long time failed to engage with critical social theory in any meaningful ways, more practitioners in the field have recently developed an interest in this direction as well. While this is certainly a positive development, it is also characterised by a considerable degree of insecurity and lack of orientation. The current interest can be seen as a reflection of ongoing processes of the negotiations of identity in relation to global processes of socio-economic and political structures, which equally affect the ancient and persistent centres and peripheries of the Europe-centred system of colonialism. As such, the current moment requires a much more intense engagement with the forms and effects of colonialism from a historical and contemporary perspective. These equally encompass intellectual, ethical, and political dimensions. However, while a critique of Western worldviews and their destructive legacies needs to form a key part of this process, strategies of decolonisation must also find productive and inclusive ways to arrive at a sustainable relationship between decolonising approaches and scientific practices and frameworks. This paper calls for a greater and more systematic engagement with the diversity of current postcolonial and decolonial thinking in other relevant fields to create at a balanced and sustainable disciplinary identity for Palaeolithic and Mesolithic archaeology. These consider-

ations are informed by a perspective from the periphery that is itself a product of European colonialism and requires constant navigating colonial legacies in practical and legislative as well as intellectual contexts.

4 **A CASE STUDY IN REFRAMING ARCHAEOLOGICAL PRACTICE: COMMUNITY-PARTICIPATORY ARCHAEOLOGY IN SOUTHCENTRAL, ALASKA**

Abstract author(s): Krasinski, Kathryn (Adelphi University) - Wade, Angela - Johnson, Norma - Seager-Boss, Fran (Chickaloon Village Traditional Council)

Abstract format: Oral

Collaborative community-participatory archaeology involves the descendant community members from the inception of a research question to funding, fieldwork, interpretation, and dissemination. By deemphasizing the focus solely on material culture, we broaden the archaeological vision to center Indigenous values, ethics, and practices which emphasize respect, consent, relationality, compassion, care, and patience. In this case study we integrate perspectives from descendant communities to understand landscape in relation to oral history and known archaeological sites. Re-thinking archaeological practice not only has the possibility of making it more ethical, but it will result in better science. When archaeology is people centered, it may improve health, well-being, and social inclusion. Community-based archaeology opens the potential for establishing or maintaining relationships with land as well as synthesizing knowledge truncated as a result of colonialism.

Indigenous knowledge often is underpinned by a holistic understanding of the interconnectedness of life and time. In this talk we raise several discussion points on how archaeology impacts Indigenous people including responsibilities to our communities and stewardship. While distributions of artifacts may be discrete, the significant cultural landscape may be much broader. Landforms may even have personhood. Initiating projects in consultation and consent with descendant communities would ensure methods are appropriate to the site, community, and research questions are effective techniques for minimizing negative impacts of research. Further, the language of science can be reductionist. Once artifacts are unearthed, they could be curated for future generations in cultural facilities designed and managed by the descendant community rather than in inaccessible repositories.

5 **A DISCUSSION IN REFRAMING ARCHAEOLOGICAL PRACTICE: COMMUNITY-PARTICIPATORY ARCHAEOLOGY IN SOUTHCENTRAL, ALASKA**

Abstract author(s): Wade, Angela (Chickaloon Village Traditional Council) - Krasinski, Kathryn (Adelphi University) - Johnson, Norma (Chickaloon Traditional Village Council)

Abstract format: Oral

Indigenous knowledge systems often are underpinned by a holistic understanding of the interconnectedness of life and time. In this talk we will raise several discussion points on how archaeology has impacted the Indigenous people of southcentral Alaska in the past and continues to impact our descendants and our knowledge systems including responsibilities to our communities and stewardship. While distributions of the artifacts may be discrete, the significant cultural landscape may be much broader. Landforms may even have personhood. Initiating projects in consultation and consent with descendant communities would ensure methods are appropriate to the site, community, and research questions are effective techniques for minimizing negative impacts of research. Further, the language of science can be reductionist and exclusionary. Finally, once artifacts are unearthed, they could be curated for future generations in cultural facilities designed and managed by the descendant community rather than in inaccessible repositories far from their originating communities.

A. **"NOT ALL ANIMALS ARE CREATED EQUAL": VIEWING HUMAN-ANIMAL RELATIONS THROUGH INTERACTIONS OF POST-MORTEM REMAINS**

Abstract author(s): Rasmussen, Jason (University at Buffalo)

Abstract format: Poster

Prehistoric communities have been viewed for decades in terms of modern societies. Assumptions about how they viewed their environment, wealth and interactions with other species were based on Eurocentric modernist concepts which developed thousands of years after these prehistoric communities lived as a form of colonizing the past to make it more easily recognizable to scholars in the present. But recent scholarship looking at how prehistoric communities such as the Mesolithic sites of Iron Gates Gorge (Serbia-Romanian border) and Star Carr (Yorkshire, UK) looking at the relationships between human beings and other neighboring species whose remains were collected and manipulated after death in similar ways as those of humans, often being included with human remains. Red deer (*Cervus elaphus*) and the domesticated dog (*Canis familiaris*) were popular species to be included in human burials and in some cases the primary burial itself in Mesolithic Europe suggesting that the connection between these species and humans was more complex than just a hunter/prey relationship. This poster will demonstrate the complex relationship between

humans and these species at two of the most heavily studied sites of Mesolithic Europe to see if there is evidence to suggest a view of animals as Persons. This line of questioning follows the work of Dr. John Chapman and Dr. Chantal Conneller which looks at the transformability of materials and persons in Prehistoric Europe through the use of their understanding of connections and essences within the materials themselves.

514 ADOPT A MONUMENT- COMMUNITY ACTION IN A CHANGING WORLD

Session theme: 3. Heritage Narratives and Representations

Session organisers: Richardson, Philip (Archaeology Scotland) - Doyle, Ian (The Heritage Council of Ireland)

Session format: Round table

Adopt-a-Monument and similar community-led stewardship of heritage is now over 30 years old. From Scotland to Finland, Ireland to Italy, across Europe and beyond projects have been developing ways of supporting local people to care for and share heritage that is important to them. As we enter the post-covid world, acknowledge the realities of climate change and begin to understand the potential for archaeology as a medium for good in the lives of real people it is perhaps a good time to reflect.

Caring for heritage and developing skills have been a huge part of these projects but Adopt a Monument projects have also sought to enable participants to overcome barriers to participation, by devising and providing accessible engagement opportunities which are relevant to everyday lives.

It is 10 years since the first Adopt a Monument session was held at EAA and in that time things have changed dramatically. Projects have been developed that vary widely in terms of scale, audiences and outcomes. Yet the fundamental aspect of community action remains. Given this we feel now is a good time to reflect, to catch our breath and to get ready to 'go again' and tackle challenges old and new head on.

In this session we seek contributions from those engaged in caring for and championing our common past. Through a wide range of papers and position pieces, from professional practitioners and communities we will aim to address how we can meet our challenges, understand what the current strengths and weaknesses of these approaches are and to understand what our options and opportunities are for the next 30 years?

516 EUROPEAN ARCHIVES OF AMERICAN ARCHAEOLOGY [EAA4AM]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Ziolkowski, Mariusz (Centre for Andean Studies, University of Warsaw) - Saintenoy, Thibault (Incipit-CSiC, Santiago de Compostela) - Hattori, Marcia (Universidad del Pais Vasco)

Session format: Discussion session

From the earliest contacts of Europeans with native American cultures during conquests and colonization, artefacts, especially crafts and art produced by the latter, have constituted objects of interest, description and, in some cases, were taken to Europe to supply antiquity collections. In later times, and in particular from the second half of the 18th century onwards, pre-Columbian monuments and objects became the subject of more scientifically oriented research, accounts of which often accompanied the shipment of archaeological objects to European collections. The famous Trujillo del Perú codex, published by Baltasar Martínez Compañón in 1782-1785, may be viewed as an example of such an early scientific archive. As this process continued and grew during the 19th and the first decades of the 20th centuries, the production of "scientific" narratives (chronicles, measurements, graphic documentation, cartography, photography, etc.) also developed on a great scale. Most of this data has generally been accumulated in private and institutional collections throughout Europe. Today, these archives constitute a great resource, in order to research the American past as well as to better understand the history of European research approaches and practices in the Americas.

During these last decades, the archaeological collections of artefacts produced by European scientific practices throughout the Americas have often been the subject of reflections and debates, in relation to their analysis, curation, exhibition, and in specific contexts to their repatriation to their place of origin. In comparison, few have been done about the non-artefactual data (mainly texts and images).

In this session, we would like to approach the question of the scientific documentation archives of European investigations in the Americas. How well-known and easy to access are they? What is their potential for research? What is their meaning and utility for indigenous communities and American (and European) states? We would welcome both presentations on specific archives (related or not to artefact collections), as well as more global/critical reflections about the historical contexts of their production, and about the issue of archives management for their common access and use.

Organising team also contains Carolina Orsini (Museo delle Culture de Milano) and Alexander Geurds (University of Oxford).

1 THE DISTRIBUTED ARCHIVE: PROVENANCE RESEARCH ACROSS EUROPE

Abstract author(s): Joyce, Rosemary (University of California)

Abstract format: Oral

This paper examines the way that „archives“ documenting archaeologically important materials are distributed across Europe, potentially impeding understanding of histories of collection by both the citizens of the source countries from which collections came, and scholars. The case study for this is part of a larger study of collecting practices that, between 1700 AD and the late 20th century, created collections in Europe and North America from the territory today comprising Honduras and neighboring nations in Central America. Collected prior to the emergence of a canonical emphasis on specific kinds of ceramics in culture history of the region, some of these materials represent significant aspects of the precolonial history of the region, but are under-utilized by and poorly understood by contemporary archaeologists. To begin to reconstruct their history requires reassembling documents now distributed across archives in museums, libraries, and other repositories. Chert (or „flint“) lithics from Honduras are a compelling example. They became a central focus by European prehistorians in the 19th century, for whom they figured as examples of global Neolithic technology. Archival documents clarifying how these objects arrived in Europe and circulated from private collectors to museums exist in multiple museums, some associated with artifact collections, others separated from any object collections. Changing nomenclatures for places may obscure connections. The tendency for archives to be organized around European collectors or museum personnel is particularly challenging. Our understanding of the archive also needs to include media that are now out of print that may be the only records of past collecting, some of which may only be available as rare books. Thus, the „archive“ for understanding a single chert object exists in the records of the Pitt-Rivers Museum, the British Museum, Cambridge’s Museum of Archaeology and Anthropology, but extends well beyond these places.

2 THE CO-PRODUCTION OF THE ARCHIVES OF THE CARIBBEAN: A CASE STUDY FROM MOSQUITO SHORE DOCUMENTS IN BELIZE

Abstract author(s): Auzina, Dita (Bonn University, Bonn Center for Dependency and Slavery Studies)

Abstract format: Oral

The utilization of historical documents produced in European-administrated colonial settlements in the Americas as a means of gaining insight into the societies of indigenous peoples has been a topic of significant contention within the fields of archaeology and anthropology. Conversely, many historians argue that practising an alternative interpretive approach, reading “against the grain,” is yielding insights into the lives of indigenous societies.

Despite the widespread examination of the collections housed in major European archives such as those in Seville and Kew, the contents of smaller archives located in the Caribbean and Central America have received comparatively limited attention. The Belize Archives and Record Service (BARS), for instance, holds a collection of documents produced by local communities of 18th-century Nicaragua and Honduras’ Mosquito Coast that has thus far been understudied.

These documents, which include wills, contracts, manumissions, and other legal and practical transactions, offer a unique window into the co-production of creolized societies in the Caribbean region, as they reflect the interactions and relationships between individuals of European, African, American and mixed ancestry. Following the documents referring to land ownership and enslavement of individuals, one is confronted with the fact that already in the 18th century, these processes do not overlap with people’s categories as racialized by their origins. Rather, they are more likely to reflect the racialization of individuals based on their abilities to establish their socio-economic status.

By using the case study of 18th-century Mosquito coast documents from BARS, I want to demonstrate that viewing the production of the 18th-century archives in the Caribbean as a product of Europeans creates false dichotomies and ignores the agency of people of African and American ancestry who were active co-producers of these archives.

3 EXPANDING “ARCHIVES”: CONSTRUCTING CONTEXTS FOR ARCHAEOLOGICAL SITES

Abstract author(s): Sheptak, Russell (University of California - Berkeley)

Abstract format: Oral

No settlement is an island. This paper presents results from ongoing research on the historical archaeology of Central America, showing how understanding a site on Honduras’s Caribbean coast also requires investigation of settlements in eastern Honduras in Belize. Our excavations of the fortress and town of Omoa in 2008 and 2009 documented late 18th century residences in the town of Omoa. Spanish and Central American colonial archives related to Omoa are the immediately obvious archival resources. This paper argues that these are insufficient source. One cannot write the history of the 18th century Spanish fort in Omoa, Honduras, without knowing the people, and history of the Brit-

ish Black River colony in Honduras's eastern Mosquito territory and the British Settlements in what today is Belize. The histories of those residents are scattered through numerous archives in England, Scotland, and Ireland. This paper presents case study in assembling scattered archives beyond museums and collection repositories, examining family histories, company records, and government records.

520 WHAT NOW, THEORETICAL ARCHAEOLOGY? THINKING THEORY IN THE FOURTH SCIENTIFIC REVOLUTION

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Carvalho, Daniel (Quantitative Archaeology Lab - Universitat Autònoma de Barcelona; UNIARQ - Center of Archaeology of the University of Lisbon) - Agosto, Frederico (UNIARQ - Center of Archaeology of the University of Lisbon; CFUL - Center of Philosophy of the University of Lisbon)

Session format: Regular session

In the last decades, archaeological theory entered a proficuous state. Multiple approaches emerged as well as new debates and discussions within the field. From new ontological perspectives, new materialisms and a shift on Big Data and technological advancements, theory encompasses, in its present state, a vast multiplicity of dimensions. The dawn of the Fourth Scientific Revolution – Artificial Intelligence, Big Data, Deep Learning, Genetics and others – has decisively changed archaeological practice and theory. The methodological changes, and new research goals associated with it, reshaped Archaeology as a field of study. Theoretical archaeology, following the overarching trends of Archaeology, was also decisively affected. But, in this process, what represents an epistemic breaking point from previous schools of thought? How is theoretical archaeology mutating in the wake of this scientific revolution? In a sense: quo vadis, theoretical archaeology?

This session aims to reflect upon this question and in the nature of the archaeological theory in-itself, in its current state. If theory changes direction, mutates or shifts, the forms that it takes are of utmost importance for archaeologists. And, perhaps, we, as a community, will be confronted with realities that are unexpected: theories that are returning to the archaeological discourse; perspectives not yet explored and ideas that are imposed or even relegated to a plane of non-existence, because of their characteristics.

Whatever the results, the goal of this session is precisely to engage in this debate. We welcome any archaeologists, students, practitioners or researchers to present their papers with their thoughts, experiences and opinions about the direction that archaeological theory is heading, as the most efficient way to walk a path is to do it with a destination in mind.

ABSTRACTS

1 THEORY STRIKES BACK. RETHINKING THEORETICAL ARCHAEOLOGY IN THE AGE OF ITS ONTOLOGICAL RECONFIGURATION

Abstract author(s): Carvalho, Daniel (UNIARQ – Center of Archaeology of the University of Lisbon; LAQU – Quantitative Archaeology Lab of Universitat Autònoma de Barcelona; FCT – Foundation for Science and Technology) - Agosto, Frederico (UNIARQ – Center of Archaeology of the University of Lisbon; CFUL – Center of Philosophy of the University of Lisbon; FCT – Foundation for Science and Technology)

Abstract format: Oral

Archaeological theory is going back to the basics. Here we are, in the 21st century, discussing what archaeology is, and what it needs to be done. We debate about ontology, identity and the temporal scope of the discipline, and how it relates to the outside world. We, as archaeologists, dwell within other areas, benefiting from their epistemological advances and ideas. Multiple branches – archaeologies of – proliferate at an ever-increasing rate, advocating new and never before seen approaches.

And yet, we are still discussing the same core elements. What is the reason behind a “retreat” within theory? Possibly because we have never truly advanced. A History of Ideas in Archaeology is still to be fully developed and the Philosophy of Archaeology knows few advocates and practitioners.

Entering a new scientific revolution, it is time to reflect – once again – on the nature of archaeology and how the archaeological can be defined. The role of theory must be discussed rather than presumed and the basis of Archaeology needs to be addressed, rather than taken for granted.

2 TOWARDS METAMODERN ARCHAEOLOGY

Abstract author(s): Radchenko, Simon (University of Turin)

Abstract format: Oral

Currently, the archaeological theory is presented by numerous simultaneously developing approaches such as post-humanism, flat ontologies, and agent-network theory. Being not introduced as a completed and ready-to-use theory, these concepts caused what is now described as a ‘quiet revolution’ in archaeological theorizing. The common motto of these approaches would be “Back to the things themselves!” Such a trend brought two new features to the landscape of archaeological theory today: focus on ontological questions and the high level of dispersion between different parts of archaeological theory. However, the concentration on the ideas of ontological turn brought a set of new questions. What is archaeological epistemology today? When and how did it change? What happens next with epistemology?

The epistemic driver for archaeological studies is formulated in terms of scaffolding and evidential reasoning, which today seems to be the most secure and reliable way to produce scientific knowledge. However, the advances of material-driven research and “flat ontologies” in general do not have a logical connection with these epistemic tools and methods. To provide the link between the epistemological instrument and the new state of ontology, one should search for a new theoretical solution that would absorb these ideas and the advantages of the Fourth Scientific Revolution.

This report endeavors to consider the metamodern cultural theory as a solution. Being a dominant way to describe the state-of-the-art in contemporary philosophy and culture, metamodern naturally links concepts considered in contemporary archaeological theory — a commitment to object-oriented ontologies, epistemic vacillation, devotion to the ideas and concepts of the Fourth Scientific revolution, an upgraded look on the transdisciplinarity, etc. I aim to discuss if metamodern might be a new fundamental structure that links archaeological theoretical concepts of different order into one holistic theory.

3 ARCHAEOLOGICAL THEORY DURING LATE CAPITALISM

Abstract author(s): Ribeiro, Artur (Christian-Albrechts-Universität)

Abstract format: Oral

Every now and again an archaeologist, usually white, male, and middle-class, will claim to have it all figured out. They will claim to know what is wrong with archaeology, all of it, as it is practiced from Japan to Colombia. They will argue that they have understood something about archaeology that thousands of archaeologists before them have never been able to understand. And of course, they will present to everyone, through multiple talks, books, and papers, an amazing new way of doing Archaeology™ that will revolutionize the state of the art and make everything better!

Archaeology has fully embraced late-capitalist and postmodern economics, where the market bets on fast-paced short-term profits, where NFTs and meme stocks have quickly risen and fallen, and where what matters is keeping the masses constantly seduced through shiny new products. However, in archaeology, instead of meme stocks or phone apps, what theorists love selling is their shiny and brand-new way of doing Archaeology™. Archaeological theory today jumps from fad to fad, it repackages and resells old French philosophy and claims it is new, it invents problems that did not exist and creates “solutions” that no one wanted or needed. And of course, people jump onto these theoretical hype trains because they have a fear of missing out.

Ironically, as this talk will argue, archaeological theory is at its best when it is reactionary and holds on to tried and true ideas, such as Marxist theory, practice theory, dialectical materialism, and semiotics – even though these are harder to sell in the late capitalist marketplace of ideas.

4 NAVIGATING MUDDY WATERS: COMPLEXITY THINKING AS A POSSIBLE GUIDELINE FOR STRUCTURING THEORETICAL INTEGRATION

Abstract author(s): Schlicht, Jan-Eric (Kiel University; CRC 1266 - Scales of Transformation)

Abstract format: Oral

In recent years archaeology has witnessed a dynamic development in theory involving notably ‘posthumanist’ perspectives like New Materialisms, Assemblage Theory, Actor-Network-Theory, as well as countering positions, bringing theory based on ethics, practice theory or Marxism back into the debate. Simultaneously ever more sophisticated computational methods, methods from biochemistry, genetics, and other adjacent natural sciences gained widespread prominence, so much so that one could say that scientifically oriented archaeological research has positioned itself firmly in the mainstream. While a lot of good things can potentially come from all these developments, there are certainly points of conflict: Scientific archaeology and its associated ideals are criticized for harbouring the danger of methodological monism, posthumanist positions are criticized in terms of ethics and metaphysical overcommitment, more classically humanist ideas from the humanities face allegations of being exclusionary and outdated, and some theoretical positions are deemed ‘unscientific’.

All this runs parallel to increasing specialization, leading archaeology to fragment, while concurrently the demand for 'interdisciplinary research' is growing consistently. Particularly in projects aiming to investigate complex processes and large questions, involving multiple scales at once this can lead to problems, especially when it comes to assessing questions of causality, narrative or generalizations. In many cases, the natural sciences gain the upper hand as they are perceived to provide 'more secure' answers, while on another note different theoretical positions from the humanities may find themselves in debates over whose metaphysics are correct. It is here where complexity thinking could aid in navigating the situation. Formulated as a decidedly heuristic perspective derived from complexity theory it may help in addressing poly-scalar relationships, thresholds between different scales and embracing the contingent and vague nature of the past we try to uncover, while offering potential to structure the integration of seemingly incommensurable positions under a methodologically pluralist framework.

5 „THEORETICAL CONFESSIONS OF AN ENVIRONMENTAL ARCHAEOLOGIST“ REVISITED: GOING WITH THE FLOW?

Abstract author(s): Gearey, Benjamin (Prehistoric Society; University College Cork)

Abstract format: Oral

In 2019, I wrote a paper entitled: „I didnt know you were into that kind of thing?“ Or theoretical confessions of an environmental archaeologist' (Gearey 2019), as an introduction to a volume containing papers reflecting on developments in the 20 years since the publication of *Environmental Archaeology: Meaning and Purpose* (Albarella, 2001). In this paper, I revisit some of my thoughts and reflections in this piece concerning the relationship between 'science' and 'theory'. In particular, I suggest that theoretical engagements at this interface are no different to the adoption of new analytical techniques or approaches. I take inspiration from Pétursdóttir and Olsen's (2018) discussion of 'theory adrift' to highlight how contact with such theories can take 'scientific' data into new and strange waters.

- Albarella, U. 2001. *Environmental Archaeology: Meaning and Purpose*. <https://doi.org/10.1007/978-94-015-9652-7>
- Gearey, B. 2019, „I didnt know you were into that kind of thing?“ Or theoretical confessions of an environmental archaeologist' <https://doi.org/10.1141/ia.53.9>
- Pétursdóttir, Þ 2018. *Theory Adrift: The Matter of Archaeological Theorizing*. <https://doi.org/10.1177/1469605317737426>

6 PROCESSUALISM 2.0? - AI AS ECHO OF MACHINE DETERMINISM IN SOCIAL ARCHAEOLOGY

Abstract author(s): Giroto, Chiara (LMU Munich) - Price, Henry (Imperial College London)

Abstract format: Oral

The power of Machine Learning (ML) and Artificial Intelligence (AI) to detect patterns in data with either reduced human supervision or none at all, paired with the ability to achieve suprahuman classification levels in many deployments of computer based statistical evaluations, such as medicine, finance, and advertisements has made it one of the most powerful – and dangerous – tools of modern science.

ML, portmanteau term for any technology which involves the detection of patterns in data by machines, has excited our discipline – a science often haunted by it's massive, interconnected, heterogeneous, and messy datasets with the desire to reconstruct interactions. In many ways it embodies the ability to ask post-processual questions of processually analysed data as current research visions are often driven by dynamics, interaction, concepts of hierarchical and vertical social structures and functionality. Often, they adhere to mainly post-processual ideas of causation, scapes of mind and space and their human perception. Differing from the beginnings of this theoretical paradigm today statistical data evaluation has become a central asset.

In many ways the enthusiasm for ML highlights how new technologies are adapted. However, it is questionable if any archaeological dataset meets the hallmark requirements of statistical analysis: true independence and representativeness of the original distribution. Therefore, the connection of social theories and remnants of past human interactions with their environment through space and time seemingly becoming tangible as a set of equations – without considering the ambiguity of humanity as a complex system merits the same critique as uttered in 1984. Human social history should never be reduced to a "suitable equation" (Miller/Tilley 1984).

In our paper we argue for a better understanding and acknowledgement of ambiguities, limitations and inbuilt bias of constricting a nonlinear complex system, such as human history to algorithms, simplifications, and inherently messy data.

(RE)-THINKING SMALL. BLADELETS AND MICROLITHIC PRODUCTIONS BEFORE THE ONSET OF THE UPPER PALAEOLITHIC AND LATER STONE AGE [PAM]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Carmignani, Leonardo (University of Leiden , Faculty of Archaeology) - Marciani, Giulia (University of Bologna, Dipartimento di Beni Culturali; University of Siena, Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente) - Schmid, Viola (Department Prehistory & WANA Archaeology; Austrian Archaeological Institute of the Academy of Sciences)

Session format: Regular session

This session is focused on microlithic productions, exploring possible reasons for this technological choice and highlighting potential differences between UP and pre-UP assemblages. The topics can cover different theoretical and methodological approaches, including use-wear, residue analyses, and chaîne opératoire approach.

Microlithic elements are a common and frequent trait in UP (Upper Palaeolithic) and early LSA (Later Stone Age) industries. However, the production of bladelets and other small tools is well-documented in industries preceding the first UP. They are also known in the MP (Middle Palaeolithic) mainly as the result of the extreme exhaustion of various reduction methods (e.g., Levallois, Discoid, and Laminar systems) or in the MSA (Middle Stone Age) as novel practice. Production of small tools has also been described for the LP (Lower Palaeolithic).

A universal explanation for the innovation or adoption of microlithic technologies does not exist. Microlitization can constitute an excellent solution as armatures for hunting or, in general, for composite tools, but their use as individual tool cannot be excluded. Among the microliths, bladelets occupy a central role. The spread of bladelets is considered, in fact, one of the markers of the emergence of the UP industries. However, their presence is not exclusively associated with the onset of UP and LSA industries. During the MP bladelet production is sparse, often debatable, and it is still unclear whether bladelets – or microblade – were intentionally produced.

Several questions remain unsolved. What is the specific role of microlithic technologies in pre-UP assemblages? What differences, if any, can be highlighted between the UP and pre-UP? Why is bladelet production in MP contexts extremely rare and found only in very small quantities? Can the anecdotal presence of microliths be related to specific functions or activities that occur much less frequently than others – thus, it is archeologically near-invisible?

ABSTRACTS

1 NEW DATA FROM UMHLATUZANA ROCK SHELTER (KWAZULU-NATAL) AND THE ONSET OF SYSTEMATIZED LITHIC MINIATURISATION IN SOUTHERN AFRICA

Abstract author(s): Schmid, Viola (Austrian Archaeological Institute, Austrian Academy of Sciences; Department of World Archaeology, Universiteit Leiden) - Sifogeorgaki, Irini (Department of World Archaeology, Universiteit Leiden) - Dusseldorp, Gerrit (Department of World Archaeology, Universiteit Leiden; University of Johannesburg)

Abstract format: Oral

The production of bladelets and miniaturized elements gleams as an innovative practice already in the southern African Middle Stone Age (MSA), however, the distinctive focus on microlithic technologies is associated with the appearance of the Later Stone Age (LSA). This phase distinguishes itself through drastic technological changes.

The site of Umhlatuzana Rock Shelter (UMH) comprises a long sequence including Howiesons Poort, late MSA, final MSA, and early LSA occupations. Although the site is known since the excavation in the 1985 directed by Jonathan Kaplan, the assumption of rotational slipping of the deposits led to doubts about the stratigraphic integrity. New excavations by Leiden University within the research project 'Finding resolution for the Middle to Later Stone Age transition in South Africa' demonstrated that the sequence was not compromised by large-scale sediment movement and is intact. Therefore, UMH constitutes an ideal case study to examine early expressions of systemized miniaturisation and cultural turnovers.

Herewith, we present technological and techno-economic data on the lithic assemblages from the new excavations at UMH following chaîne opératoire and petrographic approaches. We highlight that early LSA artisans had specific raw material selection patterns, incorporated a variety of reduction strategies involving different percussion techniques to produce bladelets and small elements, and relied very little on retouching their blanks. Our aim is to explore the trend towards and manifestation of microlithisation. By involving comparative data, we seek to reveal differences in the status of microlithic technologies and techno-cultural trajectories.

2 LITHIC MINIATURIZATION IN HIGHLAND HUNTER-GATHERERS: A LATE PLEISTOCENE (~30-11 KA CALBP) CASE STUDY AT SEHONGHONG ROCK SHELTER, LESOTHO

Abstract author(s): Pargeter, Justin (New York University; University of Johannesburg) - Mitchell, Peter (Oxford University)

Abstract format: Oral

Lithic miniaturization refers to the systematic production and use of small flakes and bladelets from small cores. Most archaeologists working in Africa associate lithic miniaturization with the Later Stone Age (LSA), especially those of the Robberg techno complex. A lack of comparative research, unified lithic recording systems, and sites with suitable assemblages have all hampered comparisons of Robberg lithic assemblages with earlier instances of lithic miniaturization during the Middle to Later Stone Age (MSA-LSA) transition. The paper presents the results of a study using attribute analyses to compare processes of lithic miniaturization at Sehonghong rock shelter across the MSA-LSA transition and Robberg. The study compares several main data classes across these assemblages including the evidence for blade production, bipolar technology, technological shifts and size changes, raw material selection, flaking efficiency, reduction intensity, and macroscopic evidence for use. Preliminary results show that raw material stress contributed little to ancient toolmakers' choices to miniaturize their toolkits. They selected bipolar reduction to produce short, narrow, and light flakes, to manage core reduction and rectify freehand reduction errors, to test nodules, and to immobilize freehand cores in a process known as 'anvil-assisted flaking.' Tool makers also appear to have selected freehand flakes more often than bipolar flakes for use and retouch. The presence of overlapping use traces on some worn flakes suggest small unretouched flakes are not as 'disposable' as commonly thought. Temporal trends suggest long-term continuity in many of the studies' key parameters with notable differences in flake and bladelet size and core maintenance strategies across the MSA-LSA and Robberg layers.

3 SMALL FLAKES DURING LATE LOWER PALAEOLITHIC AND THE ONSET OF THE MIDDLE PALAEOLITHIC: CASE STUDIES FROM SOUTHERN EUROPE AND LEVANT

Abstract author(s): Mathias, Cyrielle (Sonia and Marco Nadler Institute of Archaeology, Tel-Aviv University; UMR 7194 - Histoire Naturelle de l'Homme Préhistorique)

Abstract format: Oral

The presence of small flakes and small tools in the archaeological record has been identified in various geographical contexts before the Upper Palaeolithic, taking its roots early within Lower Palaeolithic Lithic Techno-Complexes (LTCs). In most cases for these earliest time periods, microlithic flakes/tools are represented in low proportions within lithic assemblages. However, this phenomenon can sometimes represent a techno-cultural feature, as shown in Central Europe or in the case of the Asinipodian defined by François Bordes in Southwestern France. More generally speaking, there is a diachronic tendency towards an increase in small flake productions during the Middle Palaeolithic. This augmentation is mainly due to the development of ramification processes (even if the correlation between Cores-on-Flakes and size reduction cannot always be established) and to the development of specific flake, point and even bladelet productions.

In this paper we will present the results of technological analysis of small tool productions in two different geographical areas: Southern Europe and the Levant. The timeframe represented corresponds to the transition between late Lower Palaeolithic and the onset of the Middle Palaeolithic, when we can observe important changes within lithic technical systems. The techno-cultural trajectories through the Middle Palaeolithic are different in these two contexts, with different chronologies and sometimes unique LTCs corresponding to regional traditions. We will present here the technical choices made by prehistoric populations and the role and significance of small productions within the lithic assemblages, following examples from various contexts (site types, mineral environment, mobility systems etc.). This will allow us to discuss the different options chosen and their causes.

4 MIDDLE PLEISTOCENE LIFEWAYS REVEALED THROUGH USE-WEAR AND RESIDUE ANALYSES OF MICROARTIFACTS FROM SCHÖNINGEN 13 II-3

Abstract author(s): Venditti, Flavia (Department of Early Prehistory and Quaternary Ecology, University of Tübingen) - Rodríguez-Álvarez, Bárbara - Serangeli, Jordi (University of Tübingen, Senckenberg Centre for Human Evolution and Palaeoecology) - Walter, Rudolf (Department of Early Prehistory and Quaternary Ecology, University of Tübingen) - Conard, Nicholas J. (Department of Early Prehistory and Quaternary Ecology, University of Tübingen; University of Tübingen, Senckenberg Centre for Human Evolution and Palaeoecology, ; Senckenberg Centre for Human Evolution and Palaeoecology, University of Tübingen)

Abstract format: Oral

Small and microartifacts represent an important component of lithic assemblages throughout the whole Paleolithic era. Although scholars are now aware of the importance of studying microartifacts in archaeology, their collection

is not always systematic and their analysis is not fully integrated into standard archaeological practice. Through this paper, we demonstrate the great potential of studying microartifacts for interpreting the lifeways, subsistence and tool use of Middle Pleistocene hominins.

We present a case study from the ca. 300,000-year-old locality of Schöningen 13 II-3 (northern Germany) where several dozen small and microartifacts (the great majority between 5 and 15 mm) were recovered in an area of ca. 64 m² in close association with an almost complete skeleton of an Eurasian straight-tusked elephant (*Palaeoloxodon antiquus*). We applied a holistic approach including morpho-technological analysis, experimental archeology, use-wear analysis and optical coupled with spectroscopic residue analyses for: 1) characterizing the flaking attributes on the knapped products; 2) determining the use of the microflakes; 3) testing the potential of microartifacts for reconstructing site function; 4) reconstructing technological and functional activities performed at the location of the elephant.

Our comprehensive techno-functional analysis shows that small and microflakes at Schö 13 II-3 are resharpening flakes. Several of them show traces of processing woody materials on their striking platforms, which correspond to the former working edges of tools. Microscopic residues compatible with vegetal tissues adhering on these platforms and sticking to the dorsal retouch scars corroborate this observation. Additionally, hominins used a sharp-edged, natural fragment of flint to process fresh animal tissues, which likely originates from butchering the elephant. These results provide evidence for curatorial behavior while documenting the production and/or maintenance of wooden tools. Moreover, they demonstrate the coexistence of curated and expedient technological behavior by the Schöningen hominins ca. 300,000 years ago.

5 WHY GOING SMALL? MICROLITHIC ADAPTATIONS TO MOBILITY, RAW MATERIAL AND FUNCTION IN THE IBERIAN PENINSULA. MIDDLE PALEOLITHIC

Abstract author(s): Rios-Garaizar, Joseba (Bizkaiko Arkeologi Museoa; Aranzadi Zientzia Elkartea) - Eixea, Alejo (Universitat de València, Departament de Prehistòria, Arqueologia i Història Antiga)

Abstract format: Oral

The production of small flakes is one of the characteristics of Iberian Middle Paleolithic. It has been documented in different chronologies, regions, and technocomplexes. However, there is not a univocal explanation for these small size flake productions. In the past we have tested different hypothesis (raw material constrains, tool exhaustion, mobility strategies, precision tooling) (Elston and Brantingham, 2002; Kuhn and Elston, 2002; Bourguignon et al., 2004; Dibble and McPherron, 2006; Mazza, 2006; Rios-Garaizar et al., 2015; Bilbao et al., 2019). while other authors have forwarded others that maybe are applicable to the Middle Paleolithic (as the standardization of production- Kuhn and Shimelmitz, 2022). We are going to review different scenarios of small flake production in the Cantabrian and Mediterranean regions of the Iberian Peninsula in order to: a) define what is small flake/blade production; b) assess if small production is present in every Middle Paleolithic assemblage; and c) understand the different roles of small flakes across different sites, chronologies and landscapes.

6 BLADELETS PRODUCTION ASSOCIATED WITH NEANDERTAL REMAINS DURING THE MIS 5 AT BAU DE L'AUBESIER (FRANCE)

Abstract author(s): Soressi, Marie - Carmignani, Leonardo (Leiden University)

Abstract format: Oral

If Middle Paleolithic blade production is now well-established, it is still unclear whether bladelets – or microlithic blade production – were intentionally produced during the Middle Paleolithic. Evidence suggesting Middle Paleolithic bladelet production is sparse, often debatable, and usually dated to MIS 3 and, less often, to MIS 4. We present the results of a detailed chaîne opératoire analysis applied to more than 100,000 lithic artifacts (including the microlithic elements collected through sieving) excavated in fourteen different layers at the Bau de l'Aubesier rock shelter in south-eastern France. The Bau de l'Aubesier contained several Neandertal and (pre) Neandertal remains. ESR, U-Th, and TL dates indicate that the oldest layers are at least 200,000 years old, while the top of the sequence (level 4) is ~110,000 years old. Bladelet production documented in level 4 is, to date, the earliest independent bladelet production in a sedimentary context radiometrically dated to MIS 5d and associated with Neandertal remains.

We suggest that new Middle Paleolithic bladelet productions will be discovered in the future and that a better understanding of their variability through time and space is a prerequisite to reconstructing the significance of these technologies some 50 to 200 ka before the proliferation of Upper Paleolithic blade and bladelet technologies.

Current knowledge does not help us clarify the lack of bladelet production during and prior to MIS 5 in Europe. Our study suggests the need to study, in detail, whole assemblages that have been recovered with sieving to recover the fine lithic fraction. Our study also highlights the need to standardize the terminology used to describe Mousterian bladelet production.

7 THE BOHUNICIAN ASSEMBLAGE FROM OŘECHOV IV (CZECH REPUBLIC) AND ONSET OF THE BLADELETS PRODUCTION

Abstract author(s): Bartík, Jaroslav - Škrdla, Petr (Institute of Archaeology of the CAS, Brno) - Nejman, Ladislav (School of Archaeology and Anthropology Banks Building, The Australian National University) - Demidenko, Yuri (Ferenc Rakoczi II Transcarpathian Hungarian College of Higher Education)

Abstract format: Oral

New evidence from the Moravian Bohunician site Ořechov IV demonstrates that the Initial Upper Palaeolithic (IUP) is more heterogeneous than previously thought. While Ořechov IV exhibits overarching technological similarities with key Bohunician sites, this assemblage contains several unprecedented elements. These include a significant bladelet element, miniaturization in the Levallois blanks and a new intensity of offquarry reduction. These differences are supplemented by differences in raw material composition, specifically an absence of exotic material, and high rates of artefact removal. It is tentatively suggested that these differences indicate the presence of diverse technological traditions and/or cultural groups in Moravia (Czech Republic) during the IUP.

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8 MICROLITHISM IN THE ULUZZIAN: PRODUCTION AND USE

Abstract author(s): Marciani, Giulia - Arrighi, Simona (University of Bologna, Dipartimento di Beni Culturali; Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, U. R. Preistoria e Antropologia, Università di Siena) - Rossini, Matteo - Ronchitelli, Annamaria (Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, U. R. Preistoria e Antropologia, Università di Siena) - Colline, Carmine (Museo Civico Archeologico Biagio Greco) - Spinapolice, Enza (Università La Sapienza, Dipartimento di Scienze dell'Antichità) - Harvati, Katerina (University of Tübingen, Institute for Archaeological Sciences and Senckenberg Center for Human Evolution and Paleoenvironments; University of Tübingen, DFG Center for Advanced Studies 'Words, Bones, Genes, Tools') - Benazzi, Stefano (University of Bologna, Dipartimento di Beni Culturali) - Moroni, Adriana (Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, U. R. Preistoria e Antropologia, Università di Siena; Centro Studi sul Quaternario)

Abstract format: Oral

The Uluzzian is a techno-complex dated approximately from 45,000 to 40,000 years cal. BP, it has so far been identified in Italy and Greece, and it represents one of the first dispersals of *Homo sapiens* in Europe. The Uluzzian sites show a remarkable coherence as far as technological behaviour, presence of colouring substances, systematic use of bone tools and ornaments. It displays a sharp break from the partially coeval Mousterian techno-complex, both in technology/typology and subsistence strategy.

In this presentation we focus on the production and use of Uluzzian small tools: flakelets, bladelets and the hallmark of this technocomplex: the lunates, taking into consideration the evidence provided by some key caves in southern Italy: Grotta del Cavallo, Riparo Uluzzo C, Grotta di Castelcivita and Grotta di Rocca San Sebastiano.

Technologically, the Uluzzian aim is to produce bladelets and flakelets obtained by straightforward debitage, with the striking platform being made by a single or few removals, or by just a cortical platform, and the debitage surfaces being roughly managed. The knapping strategies are dominated by the use of the bipolar technique on anvil, which generates a low standardisation of the products.

This production brings considerable technical advantages and lower technical requirements. The technical advantages are related to the higher versatility in terms of initial supports, as well as the ease at obtaining bladelets and flakelets with sharp cutting edges and rectilinear profiles. These are all technical features that made these small products optimum components for composite instruments.

The lunates are curved-backed tools that characterised this technocomplex and are very abundant at Grotta del Cavallo, where their role as parts of composite projectile weapons was tested through a combination of usewear, residue analysis and experimental ballistic tests.

LITHIC ONTOLOGIES: RETHINKING THE MEANING OF KNAPPED LITHIC ARTEFACTS IN PALAEOOLITHIC AND MESOLITHIC EUROPE [PAM]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Little, Aimée (University of York; YEAR Centre) - Conneller, Chantal (Newcastle University) - Nyland, Astrid (Universitetet i Stavanger)

Session format: Regular session

Lithics, thanks to preservation bias, are the most commonly occurring artefacts on prehistoric sites and are regarded as essential technology in human (pre)history. From fire-making to hide-working, knapped lithic artefacts have played a fundamental part in everyday human life for millions of years. Studies of lithics have historically focussed on geological variation, typologies, mechanical functionality, and related spatial questions concerning intra- and inter-site variation. In the last four decades, the social dimensions of lithics have been recognised and articulated in various ways; perhaps most successfully through studies of technological chaîne opératoire and artefact biographies. Ethno-historical accounts reveal that even stone caught up in mundane tasks reveals different configurations of the world: tracing the interactions between people and stone reveals ways places and materials were understood and expressed. With the latter in mind, how do we move beyond reductive functional accounts and explore the social agency of lithics (as has been proposed for plants, humans, and animals)? In this session we welcome contributions that explore new ontological frameworks for knapped lithic artefacts, acknowledging their role as active participants, capable of extending and transforming bodies, and on occasion, interacting as gendered, sentient beings.

ABSTRACTS

1 THE ANIMAL IN THE STONE: PALEOLITHIC ONTOLOGIES AND STONE-TOOL TECHNOLOGIES

Abstract author(s): Barkai, Ran (Tel-Aviv University)

Abstract format: Oral

Significant cultural and biological transformations took shape in the course of the long Palaeolithic epoch and the relevant human adaptation strategies in the Old World. Within this framework, cycles of changes in lithic technologies are evident, however the question why these changes, innovations and developments took place remains unanswered. Stone tools are mostly regarded as extra-somatic means of adaptation, as solely functional objects in the service of humanity. I will argue that Palaeolithic stone tools were also conceived as mediators between humans and the animals they were dependent upon, and thus had a major role in the ontology and cosmology that guided human behaviour in the Palaeolithic. In this talk I will put an emphasis on the lithic-fauna nexus, in an attempt to correlate between faunal turnovers/transformations and possible related technological preferences. I will focus on the dependency of Palaeolithic human groups on large game and the significant relations between hunters and their prey, suggesting that human interactions with animals and stones were not only practical and economic, but based on ontological and cosmological conceptions. Thus, changes in the availability of major game animals might have necessitate a significant modification in human mode of adaptation, which is not only practically oriented. This talk will attempt at presenting a new model for reconstructing changes in human adaptation during Palaeolithic times with a focus on the reasoning behind transformations in stone-tool technologies.

2 THE STONE, THE DEER, AND THE MOUNTAIN: LOWER PALAEOOLITHIC SCRAPER TECHNOLOGIES AND EARLY HUMAN PERCEPTION OF THE ENVIRONMENT

Abstract author(s): Litov, Vlad - Barkai, Ran (Department of Archaeology and Near Eastern Cultures, Tel Aviv University)

Abstract format: Oral

Stone tools were essential for successful adaptation of Palaeolithic humans, leading to their embeddness in an array of practical, cosmological, and ontological conceptions. The archaeological record of the Lower Palaeolithic period in the Levant demonstrates that early humans were familiar with the landscape but were also highly depended on acquisition of prey animals to sustain their dietary needs. Patterns of continuity and change in stone scrapers, tools commonly associated with intensive processing of animal remains, might indicate technological adaptations related to shifting hunting practices or faunal fluctuations. An evident innovation in scraper technology emerged in the Late Lower Palaeolithic Levant, with the introduction of scrapers shaped by Quina retouch. Our investigations at the sites of Jaljulia and Qesem Cave show that Quina scrapers were often made of flint originating from the Samaritan highlands to the east of the sites, while most of the other flint tools were made from locally available flint. The home range of fallow deer, an ungulate frequently hunted by Lower Palaeolithic humans, includes the Samaritan highlands throughout the Pleistocene until biblical times. We suggest a possible nexus between fallow deer hunting grounds and the place of or-

igin of the stones used to produce Quina scrapers, presumably the tools used for processing fallow deer. The growing significance of fallow deer in human diet following the disappearance of megafauna made scrapers key tools in human existence. Consequently, the Samarian highlands and the mountains of Gerizim and Ebal, noticeable landscape nodes bearing both the essential ungulates and the stone selected for scraper production, gained supreme importance in the eyes of Late Lower Palaeolithic humans. We will present archaeological and ethnographic evidence in support of our claims, shedding light of the nexus between humans, animals, stones, and the environment.

3 LITHIC TALES OF BROKEN BONDS AND DEVASTATION IN MESOLITHIC WESTERN NORWAY?

Abstract author(s): Nyland, Astrid (Museum of Archaeology, University of Stavanger) - Damlien, Hege (Museum of Cultural History, University of Oslo)

Abstract format: Oral

Objects can have agency or charisma, and to maintain traditions of lithic production can be a social strategy linking ones' group affinity to an ancestral or social origin. Hence, lithics take an active role in remembrance, connecting people with their past, other groups, hence, reflecting ideas of people's place in the world. In our talk, we ask what happens if an external force challenges this role and the possibilities of continuing an established lithic tradition. Can lithics tell tales of broken social connections, or of established strategies for societal safety?

As part of the project 'Life after the Storegga Tsunami' (LAST), lithics from 27 sites, dating 7500-5500 BC, from the coast of Western Norway are analysed. We focus on blade production concepts, classifying attributes such as core preparation, blade curvature, platform angles or degree of cortex, on a large scale. The data supports our explorations of whether disturbances to social situations are reflected in knowledge transmission in production concepts. Here the 'disturbance' is a known large-scale tsunami hitting the the West Norwegian coast 8200 years ago.

We are comparing identified spatial and temporal expressions of lithics over time and space, discussing what identified continuity and change can represent. We cannot be certain that the tsunami encounter led to changes in lithic production, yet at one point, identified changes in production indicate a specific lithic concept or tradition stopped serving the community. Something did change. We thus return to what lithics are saying and how they take part or affect society. The question is no longer whether lithics talk, but what stories they tell about their extended role in human societies.

4 EXPLORING THE SYMBOLIC MEANING OF THE FLINT FIGURINES OF KHARAYSIN (EARLY NEOLITHIC, JORDAN): MORPHOLOGICAL ANALYSIS AND CONTEXT OF DEPOSITION

Abstract author(s): Ibáñez, Juan (Spanish National Research Council - CSIC) - Huet, Thomas (University of Oxford) - Muñoz, Juan (Pontifical Faculty of San Esteban in Salamanca) - Santana, Jonathan (University of Las Palmas de Gran Canaria) - Tapia, Jesús (Sociedad de Ciencias Aranzadi) - Teira, Luis (IIIPC-University of Cantabria)

Abstract format: Oral

Kharaysin is an Early Neolithic (PPNA and PPNB) site located in the Jordan Highlands (Zarqa). During the excavation of the funerary areas dated at the Middle PPNB period (circa 7,800 cal BC) some flint bladelets and flakes showing two pairs of notches were discovered. The double-notched bladelets and flakes did not show use-wear traces and were spatially associated to a funerary area. These objects, interpreted as human depictions, were published in Antiquity (Ibáñez et al., 2020). In this oral presentation we show 30 more possible figurines that were found in the 2021 and 2020 fieldwork seasons. The morphology of the objects is analysed, suggesting that the figurines represent both women and men. The location of the figurines is clearly associated with the primary and secondary burial contexts. Most probably, the figurines were used during funerary rituals, what stress the relevance of beliefs relating living and death individuals during the origins of the Neolithic in SW Asia.

5 STONE TOOLS AS SENTIENT BEINGS? NEW INSIGHTS INTO THE DIVERSE ROLES OF LITHICS IN MESOLITHIC MORTUARY CONTEXTS

Abstract author(s): Little, Aimée (University of York)

Abstract format: Oral

This paper proposes the question – is it possible that some lithics in Mesolithic graves represent sentient beings? Stone Dead, an AHRC-funded project has been gathering life history data (geology, technology, use-wear traces, depositional context etc) on lithic tools and their role in Mesolithic mortuary rites and rituals. Rather than being passive “accidental inclusions” or “personal toolkits” as is often proposed, their role appears to be far more complex, with wear traces on some lithic artefacts revealing information about their use in the funerary rites. Diverse treatments, including their employment in the mortuary rites, acts of destruction and special deposition, hint at deeper meanings: revealing the social agency of lithics placed with the dead. In some instances, parallels between the treatment of stone and human body forms within funeral contexts can be seen. Whilst the regular occurrence of unused/commissioned

single blade forms, and the placement of un-retouched blades and stone axes with non-tool users (infants, dogs), opens a discussion on what these objects might represent within the funerary sphere.

6 SLEEPING CREATURES: UNDERSTANDING PERCEPTIONS OF FOSSILS IN KNAPPED STONE

Abstract author(s): Conneller, Chantal (Newcastle University)

Abstract format: Oral

Sources of knappable stone, such as flint, often contain fossils. From the Lower Palaeolithic onwards stone tools and their chaînes opératoires provide evidence for people's engagement with fossils, usually of marine organisms such as echinoids, ammonites and bivalves. For people familiar with beaches and coasts, these fossils may have been conceived as familiar forms in unfamiliar materials; for other peoples these forms may have had more varied interpretations. This contribution will explore early prehistoric people's engagement with fossils, as found objects, and as inclusions in stone tools and knapping debris, drawing on early prehistoric evidence, in particular from the Upper Palaeolithic and Mesolithic of western Europe, I will investigate how interactions between people and fossils may have been bound up with ideas about the agency of materials. I will argue that through tracing technological interactions involving people, flint and fossils, we can understand how broader understandings of the world were generated.

523 IMMERSIVE TECHNIQUES AS TOOLS FOR PUBLIC OUTREACH IN ARCHAEOLOGY

Session theme: 3. Heritage Narratives and Representations

Session organisers: Lucey, Donal (Arcadis) - Schenck, Tine (ArchaeologistsEngage) - Krogsrud, Linn (Viken county administration)

Session format: Regular session

Archaeological public outreach has for a long time seen the need for a move away from traditional glass-case exhibits. Museums are suffering from declining visitor numbers and media such as movies and documentaries have increasingly taken over as a primary public source of information about archaeological pasts. The general public often wants to be more involved, to experience something rather than just see it. However, these experiences are increasingly produced by agents outside of the archaeological discipline. The draw of Viking markets, fictional novel series, or epic movies can perhaps be said to lie in the experience itself, of the feeling of being absorbed into another world.

As such, the success of many of these media lies in the application of immersive techniques to draw their audience in. Immersion, the subjective impression of participation in a comprehensive, realistic experience, is what spurs people to watch 'Rome', read historical fiction, engage in historical reenactment, use Augmented Reality or play 'Assassin's Creed'. A key feature of immersion is suspension of disbelief, which can make people experience these worlds on an emotional level, as if they were real. However, a significant problem with many immersive media is their lack of connection to the archaeological discourse and expertise, and the result is often biased, sensationalist, euro-/androcenic, or wholly inaccurate, and only reaches privileged groups. This session seeks to explore what it is about immersive techniques that works, its pitfalls, and how we can apply immersion firsthand as a tool in public outreach.

We invite speakers to discuss all aspects of immersion, both successful and unsuccessful attempts, as well as aims, ethics and problems with using immersion in archaeological outreach. We want to promote discussion of the role immersion should play in archaeological outreach going forward, and how archaeologists can influence immersive experiences.

ABSTRACTS

1 FULL POTENTIAL OF RE-ENACTMENT AND LIVING HISTORY? WHAT TO EXPECT FROM AND HOW TO WORK WITH VOLUNTEER HISTORY ENTHUSIASTS

Abstract author(s): Lenár, Vilmos (Eötvös Loránd University)

Abstract format: Oral

In recent years there has been a new wave in Hungary for interweaving experimental archaeology and a small segment of re-enactors and living historians, we could call „professionals“. They are professionals because the methodology they are working with is close to, or driven by a scientific approach. Presenting their results to the public both in and out of institutional contexts has a varying history in terms of public outreach and incorporating it within academic discussion. While there has been a lot of improvement in this relationship in Hungary, there is still an enormous room for more. However, for this the academic field should learn how can they use re-enactors to their full potential, while helping the „professional“ reenactors and living historians to improve in the field they put a lot of work into already by pure enthusiasm. With this there is also a need to understand what the guidelines are for the re-enactors and what is the best methodology to follow. And maybe the hardest part, how can institutions motivate the re-enactor commu-

nity to drive towards these professional guidelines. With archaeology getting closer to being hyperfocused, presenting these kind of results to public is more important than before. With this, „professional“ reenactment and living history can be the way forward, as it can provide accessible interactivity for the public. However, these fields need guidance, and not just from people who are part of both academic and the re-enactment or living history circles. But these people can, and more than ever should, communicate and help both fields to understand each other. The author of the paper tries this by using both the personal experience of 14 years as an active Roman military re-enactor and Hungarian examples from recent years.

2 ARCHAEOLOGY AND ROLEPLAYING GAMES

Abstract author(s): Sanders, Jeff (Society of Antiquaries of Scotland) - Tyrrell, Brian (Stout Stoa Press) - Simonen, Elizabeth (Writer) - Christie, Heather (ArchaeoPlays) - Beale, Gareth (University of Glasgow)

Abstract format: Oral

Can we combine the immersive group storytelling of roleplaying games with archaeological research? Can we do this in a way that is accessible, avoids stereotypes, and provides the opportunity for active involvement, rather than passive consumption, of the stories of the past? This is what we (a game designer, writer and three archaeologists) set out together to explore. This talk will chart the process of creating Carved in Stone, a setting guide for roleplaying games set in 7th century AD Pictish Scotland, from inception towards completion.

The work of creating a setting guide for roleplaying games, from initial research through to final design, has thrown into stark relief how archaeologists structure, communicate and disseminate information. Drawing on the experience of each of the team, we'll explore some of the challenges and opportunities that a role-play game provides to empower others to build an immersive experience drawing on rich archaeological information.

3 CARPE DIAMONDS! CRAFTING ROMAN BRISTOL AND THE USE OF MINECRAFT AS AN EDUCATIONAL TOOL

Abstract author(s): Lucey, Donal - Woodcock, Dean (Arcadis)

Abstract format: Oral

Minecraft is a video game which has been often used to recreate historic sites and buildings, whether by individuals playing in their leisure time or by institutions as part of teaching or outreach. However, its potential for recreating the past at a landscape level and for teaching people about how their local community looked in the past has barely been tapped. However, some excellent projects such as VALUE Foundation's "RoMinecraft" and Dig It Scotland's "Crafting the Past" have made great use of this aspect of Minecraft.

Crafting Roman Bristol is an ongoing volunteer project that aims to recreate a c. 20 square kilometre part of the Bristol region in Minecraft as it may have appeared during the Late Roman period c. 350 AD. This presentation will outline the desired teaching and outreach outcomes of the project and discuss the pros and cons of the software and methods being used. It will also explore how these methods can be shared to enable others to undertake similar projects, and present questions and issues raised by the project such as the balance to be sought between accuracy, guesswork and the need to create engaging experiences. Furthermore, we will outline the methods by which the project output will be used for outreach and potential avenues for improvement on similar projects in the future, touching upon the uses of Minecraft as an archaeological research tool and a format for public engagement that can be easily updated to accommodate new discoveries.

4 LOST DREAMS AND HIGH HOPES. CRAFTING AN IMMERSIVE HERITAGE STORY THROUGH A VIDEO GAME MEDIUM

Abstract author(s): Schenck, Tine (We are Human; ArchaeologistsEngage) - Dall, Jonas - Mennecart, Quentin - Merchak, Stéphanie - Fjellström, Markus (We are Human)

Abstract format: Oral

Video games have long had a huge draw on people worldwide, and the gaming market has now bypassed the movie market in terms of profit. Game experiences are no longer just had in teenage bedrooms, but reach players of all ages, genders and continents, on a variety of platforms.

This explosion of gaming interest has led to an increasing amount of independent game developers competing with traditional AAA actors such as Nintendo, Ubisoft and EA games. The indie market holds a large potential for creative new ventures, and is for a large part driven by ideals, art and social commentary more than profit. It is within this space we decided to make a game about cultural heritage.

We are Human game studio started working on a cultural heritage idea in 2019. This talk will walk you through the process of making a game from scratch from the code up, all the while not sacrificing neither content, style, graphics,

audiences or ethics to do so. We will discuss how the process has taken us through the early identification of theme and tone, ideas that stuck and ideas that didn't, task division, new beginnings and how to not give up when things are making slow progress. We'll talk about the crafting the story through gameplay and relationships, and how to tell a real story through the medium of a fictional one.

Lastly, this talk will discuss how we work to steer clear of colonialism in our representation of (analogous) cultural heritage, and how to tell a story of living cultures from an outsider point of view; a position that is in dire need of reflection when telling a story of a culture not your own.

5 REVERSING PRIORITIES FOR IMMERSIVE VIRTUAL REALITY RESEARCH AND EDUCATION IN ARCHAEOLOGY

Abstract author(s): Zubrow, Ezra - Bible, J. (University at Buffalo) - Lindstrom, Torill (University at Bergen)

Abstract format: Oral

The state of the field of immersive technologies for research, instruction and gaming has advanced significantly during recent years. This advancement is attributed to several factors including advances in compute capacity/speed, video graphics displays, switch network technologies, end-user simulation software and devices. However, most of the development has been driven by market uses rather than research or educational priorities.

This paper considers the reverse. What happens if one prioritizes research and educational uses above market uses. New priorities become critical. What archaeological research questions can be answered with immersive virtual reality? Questions about prehistoric perception, decision making, and memory to name a few. For example, neuroscience shows that body and mind representation are flexible and work well in immersive virtual reality. Because virtual reality is programmed, the form of the virtual body can be quite different from the participant's body -similarly for the environment. These differences and their impacts are measurable. Thus, one may use virtual immersion to explore the differential perceptual and cultural worlds of earlier hominids in comparison to modern humans.

What are some important archaeological educational uses of immersive virtual reality? They include understanding the diversity and similarities of past cultures; understanding the structure and transformation of societies and cultures over time; analyzing the impact of cultural contacts; integrating biological limitations on human behaviour, social organization, and the environment; and showing how these phenomena help understand modern societies.

The University at Buffalo and the University of Bergen have been active in integrating these technologies providing research and educational programs across their respective institutions for the last several years. They are constructing state-of-the-art immersive research and educational complexes that are described.

6 UIST UNEARTHED: CHALLENGES AND OPPORTUNITIES FOR CREATING IMMERSIVE DIGITAL EXPERIENCES AT HIDDEN ARCHAEOLOGICAL SITES

Abstract author(s): Gal, Emily - Rennell, Rebecca (University of the Highlands and Islands; UHI Archaeology Institute)

Abstract format: Oral

Uist, in the Outer Hebrides of Scotland, boasts internationally significant archaeological sites, exceptional preservation of remains, and diverse archaeological landscapes. Nevertheless, there are few upstanding remains, fewer still with any form of on-site interpretation and limited material in local museums. This is challenging for communities and visitors wishing to engage in more meaningful, immersive experiences at Uist's archaeological sites. To address these challenges, the award-winning Uist Virtual Archaeology Project has employed 3D digital visualisation techniques to reveal Uist's archaeological sites. Central to the project is a mobile app, Uist Unearthed. Using Augmented Reality (AR), Uist Unearthed reimagines five archaeological sites through interactive and lifesize AR reconstructions. The reconstructions are location triggered, with each one aligned at the site's original location to champion place-based interpretation.

The project is created and delivered by archaeologists at UHI Outer Hebrides with the house reconstructions and content therein informed by excavation data and consultation with the original excavators, ensuring that authentic archaeological data and stories are at the forefront of these experiences. Alongside AR, the project has experimented with a variety of multimedia approaches offering different levels of immersion – from animations, audio and 3D printed artefacts to Virtual Reality experiences. In this paper we reflect on the successes and challenges of using AR, VR and other creative media as public engagement tools, the value of 'authenticity', and balancing this with positive user experiences.

7 360 RECORDINGS OF ROCK ART - WHY AND FOR WHOM?

Abstract author(s): Vestrum Kirkhus, Lene (NTNU University Museum, Department of Archeology and Cultural History) - Stebergløkken, Heidrun (NTNU Department of Historical and Classical Studies)

Abstract format: Oral

People want new experiences, and at the same time we need new approaches showing rock art to the public. In Central Norway a lot of the rock art are not that visible in flat light, due to weathering among others. A lot of the rock art is only visible after dark with artificial lighting, how can we show the rock art for tourists during the summer when it barely gets dark? We want to present a pilot project from NTNU University Museum funded by The Directorate for Cultural Heritage, the Conservation program of rock art. This project also collaborates with the Department of Historical and Classical Studies and the archaeology program at NTNU. Student employees in collaboration with education staff and the project manager of the Conservation program at NTNU University Museum, are making 360 recordings which is annotated with information, tracings, scans etc. These objects can be experienced with low budget cardboard/desktop VR, which gives the public a possibility to visit the site digitally with a full 360 panorama of the rock art site. The archaeology program also collaborates with VR Learn (<https://www.ntnu.no/geografi/vr-learn>) and EMERGE (<https://www.ntnu.edu/sosant/emerge>), which also helps to implement this technology as one of the tools for education and dissemination for students and educators. In this way the students get experience in producing 360 recordings within a pedagogical frame, and experience with dissemination tools that is work related. The archaeology program gets 360 material that could be used and built on further by other students, og the University Museum will receive 360 recordings that could be used to give the public new ways of experience rock art in noninvasive ways that does not threat the fragile rock art.

8 IMMERSIVE TECHNIQUES IN THE UKRAINIAN HISTORICAL AND CULTURAL RESERVES. POSITIVE AND NEGATIVE EXPERIENCES

Abstract author(s): Ivantsiv, Yarema - Ivantsiv, Mariia (NGO)

Abstract format: Oral

Ukrainian experience of using immersive techniques on the example of open-air museums and the goal of the initiative SUN (Support Ukraine Network).

The times require urgent solutions and new approaches to the presentation of artifacts, research and interaction with the public, especially children and young people. Ukrainian museums and culture-history reserves also faced the need for reforms and began to look for solutions.

Important issue for us is the fight against myth-making and imposed stereotypes. The coverage of some historical periods in Ukraine is distorted and requires new research, presentation and the creation of a new image in public consciousness. The immersion method, digitization and of course media can best deal with this. But without a scientific basis, the results will not be high-quality, long-lasting, and in our case, will not provide a solid basis for the reconstruction of Ukraine. We are sure of this because we see from the experience of Ukraine that where the historical truth was hushed up or presented in a distorted format, there was a place for manipulation.

In the past years, we have successful examples of digitization in reserves, the creation of a number of 3D models of hillforts, augmented reality and the creation of a computer game based on a real monument, the completion of which was stopped by the war.

Together with our colleagues, from EXARC organization and Dr Aimee Little (York Experimental Archaeological Research, UK) we created SUN (Support Ukraine Network) - a support program for Ukrainians historical reserves, strengthening and promoting the development of experimental archeology in Ukraine.

9 ENGLAND TO EGYPT IN FIVE DAYS: THE UNTOLD STORY OF HARRY YATES

Abstract author(s): Tappenden, Catherine - Fraser, Adam (Arcadis)

Abstract format: Oral

Following the completion of providing masterplanning for Otterpool Park, the Cultural Heritage team at Arcadis found an opportunity for added enhancement and community engagement. The untold story of a record-breaking flight beginning in Lymppe, Kent and finishing in Cairo, Egypt, a young Canadian RAF pilot, Harry Yates and his crew crossed the dangerous terrain of Europe, the Mediterranean and North Africa as they hopped across land and sea on their way to Egypt facing trials and tribulations every step of the way. The climax of the story involved rescuing Lawrence of Arabia from being stranded on Crete. The reconstruction of this incredible journey has been made possible by funding provided by Arcadis Local Sparks to use various digital resources, without which the crucial elements of this journey would have been lost to history. Importantly, this project has contributed to placemaking for the existing local community and provides a story of interest for newcomers to the planned town.

The deployment of different technologies for this project has been vast, such resources included digitally archived dairy entries, a vital resource following the absence of the original records in following the first-hand account of the journey but its passengers. In conjunction with diary entries, historic photographs and film reels from archives and museums have enabled us to piece together the route with the aid of georeferencing within GIS software to find a lost aerodrome on the route. As well as previously recorded digital resources, we were able to capture our own digital resources using 3D cameras, creating as immersive experience as possible for our online resource of the only reconstruction of the Handley Page 0/400, the remarkable plane which made this journey.

10 “TRACES OF TRADITION”: A LOW-KEY IMMERSIVE EXHIBITION ABOUT TRADITIONAL CARPENTRY

Abstract author(s): Krogsrud, Linn (Viken county administration)

Abstract format: Oral

Buskerud heritage centre communicates traditional building techniques to craftspeople, homeowners and the public. The centre is located at an open-air museum in a historic mining town.

In 2019 the centre collaborated with the company Tidvis to create an exhibition. The two employees, a carpenter and an advisor, collaborated with Tidvis' historians, graphic designers and developers.

One part of the exhibit is a physical display centered on seven young carpenters from the late 17th c. onwards, with recreated toolboxes and biographies. Artefacts can be taken from the displays and taken to an RFID-reader – a projector then shows videos and pictures. The display does not take up floor space, and the exhibition can be combined with experimental heritage; demonstrating planing and other woodworking techniques.

Because of covid, few visitors could see the exhibition when it was opened in 2020. 2023 will be the first year that the exhibition will be shown to the public.

The other part of the exhibition is online and open to the public at www.sporavtradisjon.no. The tools and toolboxes from the display have been subjected to photogrammetry and can be viewed in 3D. All 3D-models are open source and can be viewed by people all around the world at www.sketchfab.com.

Included in the exhibit is a 360-video (with VR) of the old buildings in the museum – visitors can look at buildings from different time periods, and jump between different construction methods and architectural styles to get immersed into the time when the different carpenters lived.

The presentation will tackle the following questions:

- Is the exhibition a successful method to communicate traditional building techniques?
- Are the chosen aspects, biographies, tools and architectural history sufficient for people to gain knowledge?
- Is it engaging for everyone, or for certain groups?

11 IMMERSION THROUGH INTERACTION UNDER ABSTRACT CONDITIONS

Abstract author(s): Toulouse, Catherine (Lengyel Toulouse Architects) - Lengyel, Dominik (BTU University of Technology Cottbus-Senftenberg)

Abstract format: Oral

Immersion also works on an emotional level when suspense and sensationalism do not predominate, but when there are things to discover instead. The secret of success is the interaction aimed at solving problems, even if it is to discover a new world. When installing an interactive immersive application, the authors anticipated that the visitor would not only be interested in the exhibits and their exploration, but also in the process of creation as an experiment. The idea arose from the scientific necessity of making it possible to experience the hypothetical basis of a typology numbering several hundred individuals. Immersion revealed itself to be a suitable method for experiencing the hypothetical design process on a model scale - because virtual space has a concrete scale - in order to immerse oneself in the architecture, additionally, to try out alternative design features. What the architect's dream achieves a learning process in the humanities that builds on both experimentation and emotion. The hypothetical character of the scientific hypothesis also addresses the dilemma of inaccuracy, since the representation can reproduce it unambiguously. Both the origin of the hypothesis and its interactive experience connect the immersive experience with the archaeological discourse. The installation stood in the context of a film, photographs and a wooden model and was thus able to draw the visitors into its spell before they even entered. As key feature compared to conventional immersive installations, the authors see the implementation of different scales, as traditionally used in architecture, but not separated from each other, but with each other in a fluent alliance. The paper will present this example of a hypothetical ideal church for about 300 parish churches, a permanent installation in the Martin von Wagner Museum in the Würzburg Residence, and explain its goals and problems in public outreach.

VARCHI NEL TEMPO / DEEP IN TIME, BETWEEN ARCHAEOLOGY AND 3D STREET ART

Abstract author(s): Pelillo, Alessia - Zanasi, Cristiana (Museo Civico di Modena)

Abstract format: Oral

The presentation is a report of an unusual and effective museum's experience where 3D art street becomes an immersive tool to make the public aware about the buried reality of the Roman city.

The Roman colony of Mutina is preserved beneath the streets in the historic centre of Modena due to the Late Antiquity deposits of the flood.

In 2017, during the celebrations linked to the Roman foundation of the city, the Civic Museum of Modena choose new languages to make the buried reality of Mutina known, combining the past with the contemporary, organizing an event of extraordinary impact on the public.

A particular urban art is perfectly suited to bring to life a buried reality such as the one that Modena preserves: the '3D street art' based on the 16th-century technique of anamorphism, known to artists such as Leonardo da Vinci, is in fact capable of deceiving the viewer by giving the illusion of sinking into the ground.

The project was proposed to the best known international artists exponents of this technique, who enthusiastically welcomed the opportunity to combine their art with archaeology for the first time.

The presence of the works in the very places of the archaeological findings involved people of all ages, intrigued by the openings that gradually revealed aspects of Mutina, and added value to the visibility of Modena, conveyed online thanks to thousands of views.

Facing long queues to locate the exact spot from which to admire the three-dimensional effect, amplified by the optical instruments made available by the artists, or obtaining it with smartphones, discovering that one can interact with the work becoming part of it generated a surprising short circuit between archaeology, art and social media, and the participation of an audience not only local, but also from outside the region.

PERFORMING GLENCOE – CREATING IMMERSIVE SOUNDSCAPES IN HIGHLAND LANDSCAPES

Abstract author(s): Robertson, Elizabeth (University of Glasgow)

Abstract format: Oral

Glencoe as a landscape has often been subject to notions of romantic sublimity. These narratives of an empty, rugged, wilderness mask the archaeological realities of this landscape which was busy with the activity of human and non-human actors and supported a rich tradition of Gaelic language and culture.

Building on areas of digital immersive design, sound design and sensory archaeology studies, in this paper I will present some of the methodologies/creative practice I have developed as a digital archaeologist working with immersive techniques for public engagement. Using immersive, interactive soundscapes, my research explores creating new forms of interaction with Scottish Highland landscapes through their archaeological, historical and geographical dimensions.

Creative and innovative approaches to immersive experiences and game design show exciting potential for the way we can engage people with archaeology and heritage. My research has taken inspiration from work that uses elements of performance to create experiences that explore heritage spaces and play outside of the traditional boundaries of AR, VR and XR.

By engaging with a range of materials, from field recordings, oral history archives, excavation data, and my own creative responses, an archaeologically informed narrative can be created and performed back into the landscape as a means of creating immersive experiences of place. In this paper I will discuss some of the immersive experiences I've been designing – a headphone-based experience about a 17th century township, an interactive sound installation based around a shieling cluster and an interactive radio experience around the ruins of a 19th century cottage. Responding to place and addressing aspects of the nature of immersion, these contemporary digital interventions promote more nuanced interpretations of highland life that, as mentioned above, have often been subject to romantic stereotypes and a memorialised past.

NEW NARRATIVES IN INDUSTRIAL HERITAGE: EXPLORING ALTERNATIVE APPROACHES TO THE INDUSTRIAL PAST

Session theme: 3. Heritage Narratives and Representations

Session organisers: Spiwak, Alexa (University of Oslo) - Äikäs, Tiina (University of Oulu)

Session format: Regular session

Industry as a subject of archaeology and heritage studies has far-reaching connections beyond technological or socioeconomic considerations, extending to many facets of human and non-human life; these can include landscape

impacts, language, culture, memory, and present-day use of space. Ruins have long enflamed romantic imaginations, spurring a variety of artistic approaches to historical and contemporary ruins. These artistic endeavours are sometimes regarded as “ruin porn”, accused of lacking in consideration for the ethical and societal impacts that led to a site’s ruinous state. In the contemporary post-industrial world, we live among abandoned and dilapidated industrial spaces, making the myriad encounters we have with the industrial past impossible to avoid. Nevertheless, authorized discourse surrounding industrial heritage and industrial archaeology remains rather stagnant and bound to the traditions of the late 20th century, signalling a potential need for novel forms of engagement to help further the field.

In this session, we search for new ways to interpret and contextualize industrial heritage. This session welcomes alternative or artistic approaches to the study of the industrial past that may fall outside of the traditional definitions of industrial heritage and industrial archaeology. This can include, but is not limited to, papers on unauthorized engagements with the past, official and unofficial industrial heritage sites, studies of abandonment and abandoned industrial estates, ethnographies of industry, considerations of industrinatur, and human and non-human entanglements. Posters, art exhibitions, films or other formats are welcome; we ask that applicants indicate the format or medium of their choice when submitting an abstract.

ABSTRACTS

1 CREATING PAUSE: HERITAGE PLACEMAKING IN NORTHWEST WALES

Abstract author(s): Spiwak, Alexa (University of Oslo)

Abstract format: Oral

As an introduction to the session, this presentation explores the concept of heritage placemaking through art in the context of Northwest Wales’ extensive slate quarries. The late geographer Yi-Fu Tuan wrote that “... if we think of space as that which allows movement, then place is pause; each pause in movement makes it possible for location to be transformed into place” (1977: 6). This paper therefore explores various artistic endeavours, undertaken by a diverse range of people, which introduce meaningful pause in the post-industrial landscapes of Northwest Wales, including graffiti, photography and the curation of artifacts and other tangible experiences. Some artistic projects are deliberately designed to commemorate workers or “reanimate” the industrial past (Orange 2021), while others are unintentional but nonetheless impactful contributions to the landscape’s palimpsest of memories. I argue that such activities - although sometimes controversial - are representative of a process of heritage placemaking which is often independent of authorized heritage discourse.

2 RUINED PLACE IN THREE ACTS: THE COMPLICATED INDUSTRIAL HISTORY OF TRACY CITY, TENNESSEE

Abstract author(s): Westmont, V. Camille (University of Cambridge)

Abstract format: Oral

Tracy City, Tennessee, is a post-industrial community of some 1,500 people south of Nashville, Tennessee, USA. Coal was mined from the hills surrounding the community for nearly a century from the mid-1800s to the early-1900s. Historical memory and heritage tourism focus on the town between ca. 1880 and 1920 when the second largest coal producer in the USA was headquartered there. These narratives effectively collapse the 100+ years that have passed since the town’s industrial peak, ignore the industry’s use of forced labor, and erase the clear causation between the industry’s abandonment of the community and the community’s extensive modern social issues. This paper presents the history of this small American town as a series of ruinations. Framing industrial heritage as a set of overlapping and intertwining forms of environmental, social, and economic ruins helps center the persisting community’s current struggles while providing a critique of the glorification of industrial “progress”.

3 IMMERSING IN ARTISTIC EXPERIENCES IN FORMER INDUSTRIAL SPACES

Abstract author(s): Juola, Marjo (University of Oulu)

Abstract format: Oral

Interpreting and contextualizing industrial heritage through art can give former industrial spaces a new life, new ways to interpret culture and at the same time keep the history of the place alive. With an experiential approach I take a closer look at two artistic performances in former industrial spaces in Oulu, Finland. One of these performances takes the audience to an immersive journey by using dance/air acrobatic elements in a show ‘Depot’ at former city depot, and in the other a sound art collective uses the old pulp mill factory as an instrument. What these immersive performances can bring to these spaces? Art can change perception of the places and make them alive for those who encounter these places for the first time. By using former industrial places for artistic performance audience will get familiar with the history of these places and it can increase interest towards industrial heritage. Artistic interpretations

in their many forms can deepen our understanding of the meaning of the character of these places and their importance in the wider discourse within industrial heritage.

4 **LAND ART / LIGHT ART AND IBA EMSCHER PARK, GERMANY**

Abstract author(s): Orange, Hilary (Swansea University)

Abstract format: Oral

“The Ruhrgebiet has dared to open a large lighting construction site” said Karl Ganser in 1999, at the end of his directorship of the Internationale Bauausstellung Emscher Park Project, an urban development program led by the German federal state of Nordrhein-Westfalen from 1988 to 1999.

IBA Emscher Park aimed to revitalize the Ruhr’s economy, ecology, and culture and reorientate the region’s economy away from its declining coal and steel industries toward new forms of industry, services and culture. In a relatively flat region, coal waste is marketed as a ‘mountain’ range and these high points were utilised as pedestals for large scale light installations that paid homage to the region’s industry past. This paper draws on two years of research that focused on topography, industry and art. In it, I explore how waste heaps and light art played a key role in forming IBA’s night vision for IBA Emscher Park.

5 **CHORNOBYL VISUAL LEXICON: EXPLORING THE VISUAL FRAMING OF TOXIC HERITAGE FROM THE POINT OF VIEW OF PARTICIPATORY CULTURE**

Abstract author(s): Ojala, Veera (University of Turku)

Abstract format: Oral

Even though the Chornobyl exclusion zone (CEZ) is one of the most well-photographed and visually documented sites, little is known about the visual framing of the CEZ from the point of view of participatory culture. This study is investigating how the Chornobyl exclusion zone is represented on the open photo-sharing platform, Flickr, focusing on heritage framing from the point of view of participatory culture. Flickr, a social networking site founded in 2004, has a large portfolio of photographs that have been classified and categorized. Thus, it provides a prime container of visual information in the form of user-uploaded digital photographs with an almost 20-year time frame. Through three different points in time—2008, 2013, and 2018—this study explores the emerging photographic practises of the visitors to the exclusion zone. During these years, the exclusion zone was also transformed by the intentional marketing of the site for touristic purposes, and the exponential flow of visitors transformed its landscape into a dynamically developing tourism scape. By absorbing visual content analysis based on theoretically determined categories retrieved from the theoretical framework of social semiotics, this study examines and analyses the uploaded photographs by the visitors of the zone on the Flickr platform. With this approach, the study will shed light on the visitors’ practises of visual engagement with the heritage resources in CEZ. In addition to the dynamic context of touristification, the analysis of visitors’ visual engagements with the zone’s heritage artefacts reveals visitors’ evolving attitudes and pictorial interests in the context of participatory visual culture. Moreover, this study provides insights into the participatory culture as an agent, which changes the way in which heritage is viewed, perceived, and experienced.

6 **THE ROLE OF DOCUMENTARY FILM IN THE PRESERVATION AND PROMOTION OF INDUSTRIAL HERITAGE**

Abstract author(s): Draganic, Anica - Szilagyi, Maria (Cultural studies platform CULTstore; University of Novi Sad)

Abstract format: Oral

Despite its undeniable value, industrial heritage is often neglected or devastated due to a lack of public awareness or education, economic or other reasons. Documenting is a crucial part of the process of its identification and protection, which, due to the nature of certain types of heritage, is sometimes a particularly demanding task.

In contemporary society, the function of the mass media in protection and presentation is particularly significant. The messages generated through the documentary film effectively contribute to developing the wider population’s awareness of the values of tangible and intangible heritage that bears traces of past civilizations, building a socially responsible community and evolving an interdisciplinary, integrative conservation approach.

The paper will present the results of the Beer Routes through the Vojvodina project, which resulted in the development of an interactive virtual route and the recording of a documentary film about the oldest industry in the region. A presentation of the virtual route and a projection of excerpts from the film are planned.

7 POSTHUMOUS DIALOGUE AND RESURRECTION: WEAVING MATERIALISING STORIES WITH INDUSTRIALIZED WETLAND SITES

Abstract author(s): Fredengren, Christina (Stockholm University, Department of Archaeology and Classical Studies; Uppsala University, Department of Arthistory/Conservation)

Abstract format: Oral

On the first encounter with the aerial photos of the study area Tolkien's Mordor came to mind. This was an industrial landscape where a red smoking mound of dross and cinder towers over the surrounding land and jagged edges, cave down to gaping holes in the underground. The masses of materials were extracted leaving uneven surfaces exposed to weather and wind. Furthermore, some larger cavities were filled in with strangely colored waste waters. The eye could trace trails in the ground as the temporary roads for work-vehicles – diggers, dumpers and tractors. This is the industrial heritage of shale oil and uranium extraction. It is the negative imprint and shadow place of energetic excesses elsewhere. What brought me and artist Signe Johannessen was a curiously odd wetland find, that consisted of a human skull with animal body. This was found in connection with the extraction activities. Today, only some of the industrial buildings are heritage classified. However, the whole site here at Kvarntorp near Örebro in Sweden, is a ticking environmental bomb (as a politician called it) and could on these grounds be called out at a natureculture heritage of national interest. This paper challenges the authorized discoursed of industrial heritage through our co-joined speculative artwork and writings on more-than-human transtemporal entanglements.

8 THE NEGATIVE SPACE OF MODERNITY: ARTISTIC INTERVENTIONS WITHIN LANDSCAPES OF SUBTRACTION

Abstract author(s): Benjamin, Jeffrey (Columbia University)

Abstract format: Oral

A mining landscape, as a „landscape of subtraction“ (Francaviglia 1991, 22) can be considered a sculptural form in and of itself; perforated with adits, shafts, quarries, pits, kiln chambers as well as tailings and mounds of waste rock. The ever-shifting relationship between positive and negative space -- in an artistic sense -- is also a very useful concept for thinking about, looking at, and listening to industrial spaces in general. Because of this sculptural quality, industrial structures and mining landscapes tend to attract further artistic intervention. In 2017 and 2022, and as a part of my archaeological research into the Rosendale Cement Mining District in upstate New York, USA, I co-organized two outdoor (and underground) sculpture exhibits on the grounds of the Century House Historical Society in Rosendale. In this talk, I will present images and recordings of these works of art and offer some thoughts on the interplay of figure-field and positive and negative space within the context of the industrial past.

A. UNCOVERING THE HIDDEN STORIES OF QUARRY LIFE: PHOTOGRAPHS AND GRAFFITI IN DISUSED SLATE QUARRIES

Abstract author(s): Douth, Paul (Independent Researcher)

Abstract format: Poster

This presentation delves into the working environments of Welsh slate quarrymen by photographing the vast underground spaces left behind after extraction, including the equipment and graffiti they have left in the underground workings. The methodology of the study combines photography with historical research, with a focus on identifying individual quarrymen through their graffiti. By trying to find records and families of the workers, the study aims to put faces to names and understand the individual's contribution to the industry.

This presentation highlights the significance of these disused slate quarries as cultural heritage sites, not only for their historical value but also for the educational opportunities they provide. Through capturing these labyrinthian underground spaces through photography, the presentation aims to emphasize the importance of preserving these sites for future generations to preserve the history of quarry communities, memorialize the labours of quarrymen and further an understanding of the industry's impact on both the trajectories of local communities and Great Britain at large.

527 CONFLICT LEGACIES OF THE 20TH CENTURY

Session theme: 6. Contested Pasts & Presents

Session organisers: Theune, Claudia (Dep. Prehistory and Historical Archaeology, University of Vienna) - Ylimaunu, Timo (History, Cultural and Communication Sciences, Faculty of Humanities University of Oulu)

Session format: Regular session

From Scandinavia to Southern Europe, there are numerous legacies of empires, monarchies and dictatorships, for example, from the Russian Tsarist Empire, the German Empire, the Austrian-Hungarian monarchies, but also from

the National Socialist German Reich. Many of the material legacies were the subject of archaeological investigations. At some of the sites many relics can still be seen in the landscape, others lie underground. For example, battlefields (world wars, but also local wars or civil wars), massive (still preserved) war fortifications like the Atlantic Wall or the many internment camps.

Today's political map and borders in Europe run differently than in the early or mid-20th century, respectively many borders have been redrawn even after 1989/90. Today's archaeological investigations - partly in young successor states are carried out under different (political) conditions and general frameworks than 30 or 50 years ago.

Research questions that could be addressed in this session may concern the archaeological approach to such sites - also with regard to historiography and different narratives concerning such sites 80, 50, 30, or 10 years ago. Research questions can also concern the context of the legacies, the structure of the legacies, the question of how to deal (today) with so-called contaminated (or dark) sites. In addition, the value of contemporary archaeological research in exploring new facets of the sites' history could be addressed. Of interest are also what historical narratives, what culture of memory existed at such sites and how these have changed.

ABSTRACTS

1 „UNCOVERING THE HIDDEN HISTORIES OF THE BATTLE OF KOMARÓW: „PROJECT KOMARÓW 1914“ - INTEGRATED GEOPHYSICAL RESEARCH OF BATTLEFIELDS

Abstract author(s): Dziewickiewicz, Hubert (Faculty of Archaeology, University of Warsaw; Doctoral School of Humanities) - Misiewicz, Krzysztof - Małkowski, Wiesław (Faculty of Archaeology, University of Warsaw) - Dziewickiewicz, Aleksandra (Independent researcher) - Mieszkowski, Radosław (Faculty of Geology, University of Warsaw)

Abstract format: Oral

In Polish historiography, the Battle of Komarów is known as the battle fought on the fields of the Wolica Śniatycka village in 1920 between the Polish army and the Bolshevik army. However, it is important to remember that six years earlier, on September 26, 1914, the Russian 5th Army and the Austrian-Hungarian 4th Army faced each other in the same area. During the first two days of the battle, General Paul von Plehwe's army repelled attacks by the Austrian-Hungarian army led by General Moritz Auffenberg. However, on August 28, the situation changed, and on the night of September 1-2, the Imperial army began a retreat towards the Bug River.

To this day, relics of those battles, such as trenches, dugouts, shooting pits, and craters from the artillery fire of both armies, are visible in the forests. A large part of these structures were located in deforested areas and, as a result, over the years they have been leveled by the constantly developing agricultural economy. The Battle of Komarów site is an ideal research range.

Thanks to funding from the National Science Centre Poland as part of the Preludium Bis-2 competition (2020/39/O/HS3/01233), work began in August 2021 to develop an effective methodology for conducting non-invasive research of First World War battle fields. The task is based on conducting geophysical surveys using magnetic methods, electrical resistivity profiling, electrical resistivity tomography, and GPR. Additionally, the entire project is supported by modern remote sensing data (especially LIDAR), as well as historical data such as cartographic resources.

The purpose of this presentation is to introduce the research project and the results of the field work conducted so far, as well as to raise the issue of protection of this type of site.

2 DISAPPEARANCE AND REDISCOVERY: ARCHAEOLOGY AND COMMEMORATION OF GREAT WAR IN CARPATHIAN MOUNTAINS

Abstract author(s): Vojtas, Martin (Department of Archaeology and Museology, Faculty of Arts, Masaryk university) - Czarnowicz, Marcin (Institute of Archeology of the Jagiellonian University) - Drobňák, Martin (KVH Beskydy) - Fatula, Yuri (Memento Bellum) - Kapavík, Radim (Signum Belli 1914)

Abstract format: Oral

In the winter of 1914/15, the fights of the First World War reached the borders of the Kingdom of Hungary on the current Polish-Slovak-Ukrainian frontiers. The Russian army was prevented from entering Pannonia only by the divisions of the Austro-Hungarian and German armies on the ridges of the Carpathian mountains.

This region witnessed fierce clashes of thousands soldiers in an inhospitable environment, but subsequent events overshadowed it. The empires fighting here soon disappeared and the successor states were not interested in commemorating the events, except for the parts where their nation was mentioned.

The situation in the described area was additionally complicated by the events related to the Second World War, and by the ethnic cleansing and the displacement of people considered foreign by communist Poland. The memory of places associated with the commemoration of the Great War has gone with them. Graves and cemeteries were

neglected. Communist governments had no need to remind the struggle against the Russians. Since the 1990s, the region became the target of raids by treasure hunters with metal detectors, but also of interest for a new generation who wanted to know the history of their country and ancestors.

The purpose of our work will be to present the difficult and confusing history that led to the disappearance not only of the remnants of war and cemeteries established after the battles of the Great War, but also of the entire cultural heritage of the Carpathians, as well as attempts to restore the memory of the former inhabitants of the region and soldiers who lost their lives over 100 years ago in often fratricidal battles waged in this beautiful mountain scenery. An important element of the speech will be the presentation of excavations and social activities aimed at restoring memory.

3 «FLAGS OF OUR FATHERS». INTERGENERATIONAL BATTLEFIELDS IN SPANISH CIVIL WARS ARCHAEOLOGY (1833-1939)

Abstract author(s): Martin, Gorka (University of the Basque Country)

Abstract format: Oral

In July 1936, as a consequence of a failed coup d'état, the Spanish Civil War began. The legal government of the Second Republic confronted the conservationist military rebels. The war lasted for three long and bloody years, ending with the final victory of the latter. Since the 2000s, this conflict has drawn the interest of various archaeological research teams, and thanks to that, nowadays, it is one of the most popular topics in Spanish archaeology.

Despite the Spanish Civil War archaeology being very well-known worldwide, there were other civil wars in the 19th century, such as the Carlist wars, that are almost forgotten. These conflicts represented the clash between those who wanted to implement the liberal revolution (called liberals) and those who defended the preservation of the Ancient Regime, the Carlists. There were three internecine struggles: 1833-1840, 1846-1849, and 1872-1876. The different liberal governments won in all of them. Despite this, Carlism survived and played a crucial role on the rebel's side in the next confrontation, the Spanish Civil War. As a result of this long fighting history, many young Carlists marched to the war in 1833, 1846, and 1872 but also in 1936. Far from the popularity of the Spanish Civil War archaeology, recently, there has been a significant increase in the archaeological research about the Carlist wars.

What is more, the Spanish Civil War and the Carlist wars are heavily connected, not only historically but also archaeologically. The aim of this work is to explore the archaeological links between last major civil wars of Spain. Throughout the archaeological data gathered from various battlefields, military outposts and landscape archaeology in the Basque Country, we will provide new insights about this historical phenomenon, highlighting the value of archaeology as a tool for confronting and dealing with such a conflictive past.

4 WARFARE IN THE HEIGHTS: AN ARCHAEOLOGICAL APPROACH TO THE SPANISH CIVIL WAR IN MOUNTAINS CONTEXTS

Abstract author(s): Trejo, Alejandro (Incipit - Institute of Heritage Sciences)

Abstract format: Oral

Over the last two decades, an increasing scientific and social interest in the archaeological remains of the Civil War (1936-1939) has been developed in Spain. Even though a large number of studies have been carried out, only a few of them are focused on the investigation of mountain warfare contexts.

This contribution will provide the main results of my investigation developed in the Republican mountain defensive position of the Mirador of Casablanca (Granada, Spain). Using this case as starting point, I will also provide an overview of my current PhD research project developed at INCIPIT-CSIC (Spain).

A comparative study of three different mountain areas will be conducted during my dissertation: Sierra Nevada, Sierra de Guadarrama and Ubiñas Massif. Our main objective is to analyze the complexity of the military and equipment environment adaptation and its impact on soldiers' daily life and mental health.

The expected result will provide relevant innovative information about the development of the war, the organization of the repressive spaces, and the specific difficulties or warfare in high and middle mountains, such as logistical difficulties, the organization of defensive fighting positions and the adversities faced by the soldiers.

5 TWO STORIES ABOUT WAR GRAVES

Abstract author(s): Ciciurkaite, Ingrida (Vilnius University Faculty of History, Department of Archaeology; Kultūros vertybių globos tarnyba, NGO, Vilnius)

Abstract format: Oral

The 19th and 20th centuries were marked by very large-scale conflicts that resulted in severe loss of life, hardly left a country without graves of soldiers. The archaeology of war graves has recently become increasingly important histori-

cally and politically. It is gaining more public attention and clearly becoming an interdisciplinary object of research. The first investigations of war graves in Lithuania and neighbouring regions began during WWII, when mass graves were “exploited” in order to expose the illicit actions of opponents (by both confronting sides). In recent years it has again become relevant to investigate war graves, but now modern interdisciplinary research methods are used in collaboration with scientists of different fields.

The presentation focuses on two different narratives: the story told by the data of archaeological research – research of graves and burial sites (Napoleon’s campaign, the uprising of 1863, WWI, WWII, Lithuanian liberty fighters, soldier of WWII) and – the narrative formed by the occupational regimes. It discusses how Lithuanian and involved sides public mentality was shaped out. The data of archaeological researches reveal how people “unsuitable” to the regime were hidden in order to forget them, on the other hand the cult of fallen “liberators” was formed. The remains of commanders and participants of the uprising of 1863 or post WWII liberty fighters were despised and hidden, the graves of WWII German and Polish soldiers were destroyed in order to erase historical memory. On the contrary, obelisks are built for the invaders their remains are reburied in the central squares of towns. The purpose of the report is to talk and emphasize the hidden part of the history of Lithuania and other countries during the occupational regimes and the right to memory, that we can provide based on the data of archaeological research.

6 REMAINS FROM THE BATTLEFIELD: OVER- AND UNDER-DIAGNOSTIC ISSUES DUE TO LACK OF COLLABORATION AMONG SPECIALISTS

Abstract author(s): Kadikinaite, Jovita (Vilnius University)

Abstract format: Oral

During the Lithuanian wars of independence (1918-1920), from August to November 1920 multiple battles between Lithuanian and Polish militaries took place in and around the Vilnius district. The geographically strategic scene for such battles was in Lazdėnai, Elektrėnai municipality, with the battle of Rykantai (October of 1920). This presentation will focus on 14 skeletonized remains (most probably soldiers of Polish and Lithuanian origin) uncovered in Lazdėnai village. A standard anthropological analysis, i.e., obtaining the individual biological profile, assessing various pathological conditions, including perimortem injuries, followed by detailed descriptions and documentation of the lesions, was performed. Injuries such as gunshot wounds, blunt force traumas, and evidence of explosions were found upon inspection. The outcomes of this research could be divided into two sections: possible death scenarios of the individuals studied, and reconstruction of the battle course, combined with known historical and archaeological data. This study demonstrates the importance of not taking an individual out of the battle context. Due to fragmentation and poor preservation of the remains, it is easy to overlook the bits and pieces of information, or even to over-diagnose lesions that were not inflicted on the battlefield, thus drastically altering the interpretation of any action. Furthermore, despite some good examples of collaboration among specialists in different fields, this issue is still very relevant in Lithuania, because not taking artifacts and/or historical data into consideration when studying such remains compromises the results of the research by giving a very broad and ill-defined explanation of events.

7 REPRESENTING PAST AND PRESENT: ARCHAEOLOGY, COMMUNITY, AND COLLECTIVE MEMORY OF A WORLD WAR II AIRCRAFT CRASH SITE

Abstract author(s): Saul, Tiffany - Fracchia, Adam - Merian, Everett - Lauerhass, Audrey (Middle Tennessee State University) - Morin, Morgane (Bordeaux Montaigne University)

Abstract format: Oral

Beginning in the summer of 2021, field recovery operations in search of unaccounted for United States personnel have been conducted in France at the crash site of a heavy bomber aircraft. The international team of students and volunteers from the United States and Europe have partnered with the local community, many of whom have personal memory of the crash or have become connected to the event as part of local heritage. Through a student initiative, this project has incorporated local heritage by involving community members in the design and construction of an informational display for the village town hall. The preservation of select incident-related artifacts, the design of the portable display, and the archival and oral history research for interpretation have all been conducted in direct collaboration between archaeology students and local residents. This presentation explores the meaning and use of the crash site landscape and its material culture to more broadly impact the preservation of local heritage and how the rich educational experiences of archaeological fieldwork can create and unite perspectives of collective historic memory.

8 BEFORE THE DEATH MARCH TO VOLARY: NON-INVASIVE ARCHAEOLOGICAL INVESTIGATION OF GERMAN NAZI CAMPS SCHLESIERSEE (POLAND)

Abstract author(s): Konczewski, Pawel (Wrocław University of Environmental and Life Science) - Langowska, Kinga (University of Gdańsk) - Biernacka, Katarzyna - Kwiatkowska, Barbara (Wrocław University of Environmental and Life Science) - Sady-Bugajska, Agata (Independent researcher) - Szczurowski, Jacek (Wrocław University of Environmental and Life Science) - Konczewski, Piotr (University of Wrocław)

Abstract format: Oral

Volary, a town in southern Bohemia, is one of the symbols of the tragedy of the Death Marches – as the evacuations of German concentration camps at the end of World War II were called. The march, which had its finale near Volary, is one of the better documented because of the investigation undertaken by the U.S. Army after 118 dying women were released there on May 6, 1945. The beginning of their march took place 106 days earlier – near the town of Schlesiersee (now Sława, in Poland). In October 1944, approx. 2,000 Jewish women, mainly from Hungary and Poland, were brought there from the Auschwitz-Birkenau concentration camp. The women prisoners were housed in outbuildings on two farms, creating branches of the Gross-Rosen concentration camp: Schlesiersee I and Schlesiersee II. The women were sent to build field fortifications intended to stop the Red Army. The extremely harsh living conditions in these camps resulted in the deaths of dozens of female prisoners, even before the Death March. In order to recognize the material heritage of the Schlesiersee camps, non-invasive research was carried out through: remote sensing data analysis, surface and geophysical prospecting, and an inventory of vegetation. As a result, the following were recognized: the appearance of the camps, the roads the prisoners followed to work, the anti-tank ditches they dug and the trenches they used. The probable burial sites of the dead women were also located. The results of the research provided complementary information to surviving female prisoners' accounts of conditions of enslavement in this camps. They have also prompted discussion of the material legacy of the genocide, including elements previously outside public discourse, such as fortifications buried after the war and old trees that are living, albeit non-human, witnesses to the Holocaust.

9 EMPERORS AND BEGGARS AT THE WW2 GERMAN MILITARY- AND REFUGEE CAMP OF SØLUND (DENMARK)

Abstract author(s): de Vos, Julie (Aarhus University; Museum Skanderborg; INCIPIT-CSIC)

Abstract format: Oral

During the winter of 1944-45, millions of Germans had to flee West due to the Soviet offensive of the Eastern Front. A part of these refugees were surrounded in East Prussia (then German, now part of Polish and Russian territories), and the only way out was by boat over the Baltic Sea.

Between the months of February and April 1945, and after many weeks of dangerous escape, nearly 300.000 German civilians arrived to occupied Denmark and were interned in confiscated, public buildings by the German defense force. After the surrender of the Germans, the luck of the German civilians did not change much: On demand of the Allied and due to the lack of capacity of receiving the many refugees in a Germany in ruins, the refugees were interned in camps behind barbed wire in Denmark, where they organized themselves as small societies, at the margins of the rest of Denmark.

The refugees left only few visible traces (as opposed to the German defense force), and the narratives of the German civilians in post-war Denmark are not very well known. The memory of the refugees is marked by their own absence since the last refugees left Denmark in 1949. Recent archaeological investigations at the refugee camp Sølund in Skanderborg (Denmark) is aiming to reinstall a (material) memory of these refugees, a memory that is overshadowed by that of the presence of the soldiers.

10 POST-WAR UTILISATION OF SPACES AND INFRASTRUCTURES OF NATIONAL SOCIALIST FORCED CAMPS

Abstract author(s): Hinterdorfer, Peter (Universität Wien)

Abstract format: Oral

One of the most prominent features of the material legacies the National Socialist Regime has left behind in large parts of Europe, are the numerous forced camps that were part of its policy of terror, enslavement, and extermination. The infrastructures built for internment and forced labour, but also for administration and to house guards took up large areas. Additional elements, such as access roads and railway lines specifically built to serve the camp, spread even further. This is especially the case for larger camps whose numbers of prisoners were comparable in size to the populations of small towns and often exceeded the populations of nearby settlements. Thus, the camps changed the surrounding landscapes not only during the war, but significantly influenced the further development of regions dur-

ing the post-war era. Treatment of the material remnants of forced labour and concentration camps took different forms. In some places, camp buildings were adapted and repurposed as private homes or for public uses. In other cases, barracks were dismantled, but the area that had already been levelled, equipped with power lines, water supply and sewers and connected by access roads was used to expand a neighbouring town or build up a new settlement. Workplaces, initially built and used for the exploitation of forced labourers, fell into ruins, shaping the landscape for decades to come, or were taken over by private companies and continued to operate on the industrial and logistical infrastructures of a former camp. This paper examines the different concepts of utilisation of the infrastructural remains of former National Socialist Forced camps and their influences on the development of regional settlements and industries in the post-war era.

11 HOW THE FASCIST REGIMES OF MUSSOLINI AND HITLER INFLUENCED THE CULTURAL POLICY OF METAXAS IN GREECE DURING THE INTERWAR PERIOD

Abstract author(s): Petarouda, Georgia (Ionian University)

Abstract format: Oral

The results of World War I and the economic crisis contributed to the birth of fascist parties in Western Europe. Fascist leaders campaigned in western Europe (Mussolini and Hitler) using pompous speeches, rituals and parades in order to mobilize disillusioned masses and create pro-regime fascist youth organizations. The Asia Minor Catastrophe in 1922 led to the downfall of El. Venizelos and the imposition of the dictatorship of Ioannis Metaxas. As a strongly nationalist regime, it shared characteristics with the European fascist regimes of Mussolini and Hitler. From Metaxas's regime there was an attempt to subjugate the Past in order to be instrumentalized and to be used for propaganda purposes, having as main goal a National Renaissance through the creation of a New Greek Culture. In the present study, the purpose is to present the propaganda policies of Mussolini and Hitler that Ioannis Metaxas adopted in his cultural policy, the role of Greek Antiquity in this concept and how it affected the management of archaeological sites in Greece during the interwar period.

12 CONSERVING A FRAGILE PAST - RECORDING THE BUILT HERITAGE LEGACY OF THE TROUBLES

Abstract author(s): McQuillan, Liam - McBride, Emma (Department for Communities Historic Environment Division)

Abstract format: Oral

This year marks 25 years since the signing of the Good Friday Agreement, which formed the basis for societal change, peacebuilding and a period of economic revival and increased prosperity in Northern Ireland. Concurrent with these vital ongoing processes and dealing with the societal legacies of the late 20th century period, often known as "the Troubles", is the sometimes gradual (and sometimes rapid) deconstruction of the physical fabric that articulated the conflict in the landscape and streetscapes, from police stations, and army barracks, to peacewalls, prisons and internment camps. In a society with varied and multiple historical narratives about a difficult past these physical features on their own present historical fact by their very being. How to deal with this material however presents a challenge within society where the memory of events is very much alive, and this paper demonstrates some of the work being undertaken to record and try to capture the significance of surviving built heritage remnants, often denoted as "dark heritage".

13 WHO WRITES TIBET'S HISTORY? : MUSEUMS IN EXILE, NARRATIVE MAKING AND THE DISPLAY OF POLITICS

Abstract author(s): Dimri, Devina (University College London)

Abstract format: Oral

Museums are a powerful medium for storytelling. Given the trust and objectivity traditionally associated with museums, they are able to tell compelling stories about the past, packaging specifically mandated and produced versions of the past as objective history. This provides museums with the ability to shape historical memory. This paper looks at a South Asian museum in particular, which understands this transformative ability of the museum space and uses it for its community's larger socio-political interests.

Dharamshala's The Tibet Museum's permanent exhibition 'I am Tibetan and this is our story' presents to its visitors a history of Tibet and Tibetan people, one which as mentioned on the museum's introductory panel 'deliberately challenges China's version of Tibet's past and its distorted vision of the present'. The exhibition utilizes the power of museum storytelling to make its visitors believe its version of Tibetan past while also claiming to be 'not politically neutral' and thus disregarding the notion of the museum being an objective space. By doing this the museum not only becomes an immensely complex case study but also ends up situating itself in the larger battles of narratives that underpins most domestic and international conflicts.

This paper studies this unique museum and its display of a highly contentious international conflict as it navigates the constraints set by geopolitics, high expectations of the exiled Tibetan community and the pressure of meeting global standards. The study looks at the museum's design elements, displays and curatorial voice to form a deeper understanding of both conflicts and the ways museums become the battlefield for these conflicts.

528 WEAVING DEFENSE, LANDSCAPE AND SOCIAL ORGANIZATION FROM ANTIQUITY TO EARLY MODERN TIMES

Session theme: 6. Contested Pasts & Presents

Session organisers: Ødegaard, Marie (Museum of Archaeology, University of Stavanger) - Ystgaard, Ingrid (Norwegian University of Science and Technology) - Albris, Laurine (National Museum of Denmark)

Session format: Regular session

This session explores the physical remains of civil defence; the relations between defensive structures, social organization and contested spaces and landscapes from antiquity to modern times. War and threats of attack extend beyond the activities of specialized military forces. They include all groups of people engaged in and affected by them. Thus, defensive works do not necessarily belong to a strictly military sphere of society. Defensive structures and practices are created in interplay with varying social organizations, and found for instance in farming societies characterized by unstable political bonds and alliances, and societies engaged in or threatened by plundering warfare. Aspects such as social, military, territorial and fiscal organization both activate and are activated by investment in and maintenance of defensive structures, particularly in relation to states and state formations. Recognising how, when and where such defence structures worked is fundamental to understanding systems of military organization, defensive capabilities, and the nature of hostilities in the past.

This session will examine the problems and potentials of studying defence structures as part of social organization. What are the archaeological signatures of defence structures? How do defensive structures interact with the landscapes and social and military organizations of which they take part? How does the routinization of war and the threat of attack affect people and their institutions?

To this session we welcome studies from scholars applying new methodological and theoretical insights to military geography; the organization and form of defensive structures as a result of external threats, and the dynamics of social organization. We welcome papers that explore the wider landscapes of military action, including physical monuments (e.g. beacons, lookouts, hillforts, dikes, earthworks), and the social organization of civil defence landscapes.

ABSTRACTS

1 SHEDDING LIGHT ON BEACON SYSTEMS FROM THE VIKING AND MIDDLE AGES OF NORWAY

Abstract author(s): Nilsen, Markus (University of Stavanger)

Abstract format: Oral

This paper will present an ongoing PhD project titled, "Moulding the Military Landscape with Fire", studying fire beacons from western and central Norway. Beacons were part of the civil defence in the Viking and Middle Ages, designed to warn the population against enemy attacks. They were one of the most effective signalling systems and a crucial part of the military landscape. Despite their importance, little is known of their localisation, distribution and role in the social and military organisation at the time.

By using two case study areas, the counties of Trøndelag and Hordaland (part of current-day Vestland county) in central and western Norway respectively, and combining archaeological, historical and toponymic data in a geographic information system, I will discuss local and regional beacon networks. Beacon sites are identified and geolocated, and their coordinates are plotted on modern digital maps. Viewshed- and spatial analysis are utilized to discuss the placement of beacons in the landscape, how they functioned together in systems, and how these systems developed over time. Ties between beacons and settlements from the Viking and Middle Ages are established, uncovering how these warning systems were organized on a local and regional level.

2 THE SUCK-HIND TOCHAILT - ONE EVENT IN THE VERY ACTIVE KINGSHIP OF TOIRRDELBACH Ó CONCHOBAIR, HIGH-KING OF IRELAND, R. 1119-1156

Abstract author(s): Curley, Daniel (Rathcroghan Visitor Centre) - Timoney, Martin (Research Archaeologist)

Abstract format: Oral

Toirrdelbach Ó Conchobair's 1139 tochailt (Ir. construction) is made up of physical elements, some natural and some manmade. The Suck naturally flows southwards from west Roscommon towards Ballinasloe to join the Shannon at

Raghrabeg, southwest of Shannonbridge. The Hind flows eastwards from north of Athleague to Lough Ree on the River Shannon. Between the headwaters of the Hind and the Suck at Castlestrange Bridge, north of Athleague, an overall distance of 13.5 km, are the Ballinturly and Correal turloughs (seasonal lakes). Three lengths of works were constructed, linking the turloughs to each other and to the two aforementioned rivers. While it is locally believed today that Ballinturly was fed northwards from the substantial Suck, it is our contention that some of the limited waters of the upper reaches of the Hind were fed westwards to Correal. This use of water formed a barrier, protecting and regulating access into and out of the traditional territory of the Gaelic Ó Conchobair kings of Connacht in modern mid-Roscommon to the north, keeping the Ó Cellaig lords in modern south Roscommon, and many other opponents, at a distance throughout the medieval period. Some earlier non-Irish examples of linear boundaries are considered, but it is our belief that this tochtail is the result of the military-minded Toirrdelbach reading the landscape and altering it for his own benefit and protection.

3 HILLFORTS AND RELIGIOUS ACTIVITIES ON IRON AGE BORNHOLM, DENMARK

Abstract author(s): Albris, Sofie Laurine (National Museum of Denmark)

Abstract format: Oral

This paper discusses signs of ritual activities related to Iron Age hillforts on the island of Bornholm in the Baltic Sea (ca. 100 BC – 900 AD). Bornholm has within its 588 km² at least six Iron Age hillforts, of which we only have sporadic knowledge. Iron Age Bornholm was a hub of trade and connections throughout the Baltic Region and its landscape is rich in wealthy settlements, hoards, burial sites and menhirs. Yet the role of the hillforts in the island society is little understood. Often, the sites have several phases of use spanning from the Neolithic to the Medieval Period and are located on important boundaries. The paper explores faint evidence of Iron Age deposition practices and traces of Iron Age burials and monuments in relation to hillforts, indicating that the use of these structures went beyond mere military purposes. The paper discusses whether these may have been sites of many functions of which some were of a religious nature.

4 ESCAPE FROM THE CITY AND FORTIFY THE MOUNTAINS! A POSSIBLE TERRITORIAL CONTROL STRATEGY IN POST-ROMAN GALLAECIA?

Abstract author(s): Pereiro Fernández, Mario (Universidade de Santiago de Compostela)

Abstract format: Oral

At the beginning of the 5th century, the effective control by the Roman Empire of Gallaecia, in the NW of the Iberian Peninsula, disappeared. At the same time, a new player appeared in the game, the Suebi. This German contingent will be the seed of one of the first post-Roman states in Western Europe.

In the meantime, what do the people of Gallaecia do? The existence of strongholds throughout this territory is mentioned in historical sources. In recent years, a large number of bastions have been archaeologically documented, which are chronologically located in this period. They tend to be heterogeneous and adapted to the landscape in which they are integrated.

We believe that at the end of the Roman Empire (beginning of the 5th century) there was a strategy of construction and occupation of fortresses throughout the NW of the Iberian Peninsula. In this paper we will focus on the largest documented bastions in Gallaecia and their relationship with different Roman settlements, mainly cities.

5 THE MILITARY COMMUNICATION NETWORKS OF VIKING AGE NORWAY: BEACONS AND MARITIME DEFENSE SYSTEMS

Abstract author(s): Ødegaard, Marie (Museum of Archaeology, University of Stavanger)

Abstract format: Oral

What strategies did the Viking societies develop when facing recurrent attacks? This will be studied through the material remains of the Vikings' fear and preparedness; beacons set up in high or prominent positions in the landscape as a warning or signalling system of imminent threat. Beacons were ignited at the risk of attack and war and played a crucial role in alerting the population, mobilizing military responses and for communicating between places.

The study will use place-names, written evidence and landscape archaeology together to reconstruct the social and military geography of Norway in the Viking age. The paper will investigate how fear of an outsized rival posing an existential threat can act as a catalyst for response, making leaders and communities take on strategies to reduce risk and build resilience. It will investigate the beacon organization and maritime defense systems resulting from external threats and discuss how this affected and institutionalized their institutions.

6 BUILDING SOMETHING FROM NOTHING - WHO MADE THE FORTIFICATIONS OF THE HUNGARIAN-OTTOMAN BORDERZONE?

Abstract author(s): Nádai, Zsófia Csilla (Research Centre for the Humanities, Institute of Archaeology)

Abstract format: Oral

From the Battle of Mohács (1526), the expansion of the Ottoman Empire and internal conflicts tore the Kingdom of Hungary into three parts, and during the sixteenth and seventeenth centuries, most of the kingdom's territory became a military zone. From the middle of the sixteenth century Kisvárda castle (situated near today's northeast border of Hungary), a former aristocratic residence, owned by the Várdai family, became a borderline fort of the Habsburg party.

Regarding Kisvárda castle and the region's fortifications, we have at our disposal the site itself, written and archaeological data, contemporary depictions and secondary literature. From these sources, the financial, designer and constructor background of the early modern palisade structures can be reconstructed.

The written sources are well elaborated by earlier historical research, from what it is known that the protection of the castle was organised then by the Aulic Chamber, which meant the finance of castle captains, mercenaries and the building or renewal of fortifications. Since the collected money often could not reach it's the actual destination, the maintenance required ad hoc solutions. Other sources tell that most of the palisades were erected by villagers. The survey of the existing castles and the planning of new fortifications was part of the even higher Viennese Court's Aulic War Council's commission. In this Upper-Hungarian region, the Angelini family produced most of the surveys and also the best quality ones. Last, but not least, trial trench excavation of the palisade structures was carried out in the fall of 2018, initiated by the Hungarian National Castle and Mansion Program.

From the different sources, it is possible to get to know a whole society that was responsible for the outcome of such fortifications, providing vivid stories of the everyday life of a borderzone castle.

7 NORWEGIAN HILLFORTS: KNOWLEDGE STATUS AND INTERPRETATIONAL FRAMEWORK

Abstract author(s): Ystgaard, Ingrid (NTNU University Museum)

Abstract format: Oral

In my talk I aim to give an overview over the present knowledge status of hillforts in Norway in terms of empirical knowledge and interpretational framework. Detailed knowledge of the features, dates, functions, and contexts of the almost 500 known hillforts must be described as very limited, even though hillforts attract great interest in local communities as well as among archaeologists. There is a general agreement that hillforts served military purposes, but that other purposes, such as temporary central places, and ritual and cultic functions, cannot be excluded from interpretation. However, the interpretational framework of the violence and warfare in which hill forts took part, can often be described as superficial. One reason behind this could be that a Clausewitzian understanding of warfare underlies early interpretations of the warfare of the Norwegian Iron Age. Which concepts of warfare and society can offer deeper interpretations of the warfare that caused the erection of this large number of hillforts?

8 THE TOWER OF LLOBEROLA. NEW CASE STUDY IN THE ANDALUSIAN-CATALAN BORDERS (VIII-XTH CENTURIES)

Abstract author(s): Pancorbo Picó, Ainhoa (Independent Researcher)

Abstract format: Oral

A first archaeological approach has been recently carried out to a tower located in the inner Catalan territory, known as Lloberola. Although in a very incipient stage, this study has already provided new information about the fabric and chronology of its construction, knowledge that can be added now to the data gathered some years ago from other medieval towers in the same frontier, such as Vallferosa or Ardèvol.

All of them have been always considered border towers and traditionally dated back to the end of the millennium or already in the eleventh century according to the first written sources. Now, they have been the subject of new studies and radiocarbon analyses that have allowed their reinterpretation from new points of view.

The detailed study of its walls, the analysis of mortars, and the dating by C14, together with the rereading of the written sources and a new approach to toponymy, offer a new panorama for this kind of construction. Thus it has gone from the traditional framing as Christian towers on the border, to towers of the seventh to tenth centuries, when these spaces were far from the hypothetical new lines or even in clear territories under Islamic control.

We wonder, then, not only about their chronology, but also about its exclusive identification as military-type fortifications, specially as constructions to control not the border itself but the routes in relation to it, whether the transhumance ones or the trading ones between the Pyrenees and the coast and also the salary ones, which are cited all along the medieval and modern written documents.

CASTLE IN THE DEFENSE SYSTEM AND CULTURAL LANDSCAPE OF UKRAINIAN CITIES AND TOWNS OF THE EARLY MODERN PERIOD

Abstract author(s): Vynogradska, Larysa (Institute of Archaeology National Academy of Sciences of Ukraine)

Abstract format: Oral

In the development of the defensive and socio-spatial structure of the cities and towns of the Right-Bank Ukraine of the post-Mongolian and early modern times, the main role was played by the castle, which primarily performed colonization and military functions, was the military-administrative center of the city and was usually financed by the state (Lithuanian colonization period 14-15 centuries.). For their construction, earthen fortifications of settlements of the 12th-13th centuries were used, which, as a rule, were located on cape elevations above the river. The defensive nodes of the castles followed the natural relief of the territory of the settlement, so the fortifications were irregular in plan. Under the protection of castles, on the basis of the „genetic“ factor, a street planning structure of cities was formed, which had a fan-shaped character (from the castle). During the Lithuanian period, a system of duties of the city to the castle was formed, the basis of which was military service. With the gradual introduction of the Magdeburg law in Ukrainian cities, the castle becomes a mandatory requirement for the settlement to receive the status of a city, which gave various benefits to settlements. The castle played a major role in the development of urbanization processes in cities, the formation of their socio-spatial and spiritual culture. Around the castle there was a local cultural landscape (anthropogenic), closely related to natural landscapes, waterways and urban topography. This influenced the architectural and planning structure of cities, their spatial connections (street network, the system of architectural dominants and the nature of city fortifications). Castles were an axial fortification landscape for the city, which housed sacred and social buildings and settled various ethnic groups (Polish, Lithuanian, Ukrainian, Armenian, Jewish, Tatar and others, the so-called urban residential landscapes with their own ethnic characteristics).

529 BEYOND IDENTITIES: CRAFTING INFORMATION IN THE OLD WORLD FROM THE BRONZE AGE UNTIL THE LATE 1ST MILLENNIUM BCE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Gorgues, Alexis (UMR 5607 Ausonius; Université Bordeaux Montaigne) - Brysbaert, Ann (Leiden University, Faculty of Archaeology; Netherlands Institute at Athens)

Session format: Regular session

Ample research has already been devoted to exploring the mutual relationship between identities and materiality. Yet, artefacts can carry other kinds of information as well. Through the materials used, the shapes given, the way they may be adorned, they encapsulate technical information about who crafted them and where they came from (e.g. a Greek vase in Etruria). All these qualities can be read and interpreted by users, and craft-persons. Artefacts may carry memories potentially associated with specific events or individuals, as have long been shown through object biographies' research (see Homer's works). Artefacts could also narrate things by themselves, through the scenes that may adorn them or through signs or writings that people could access directly or reinterpret, according to their own ideological background. Their shape, characteristics or volume may carry information about quantities, origins and qualities. Such kinds of information are clearly central when dealing with transport containers, but not only. Drinking vessels can carry information about the share its users were entitled to in a feast or banquet, an information related with hierarchy and social practices. A metal object can be assumed to weigh a certain amount, and therefore its shape provides information about its mass, which may be associated to its value (Bronze Age axe heads may often be discussed in such a way)... Objects carry information about themselves, their makers, their users, and the institutions they belonged to, were involved with, or were acknowledged by.

This session invites contributions dealing aspects with the non-verbal transmission of technical, ideological, narrative or economic information through all kind of artefacts (pottery, metal, organic materials...), on a very wide area spreading from the Middle East to Western Europe, and from the Bronze Age to the late 1st millennium BCE. Theoretical presentations are welcome, as well as case or local/regional studies.

ABSTRACTS

1 INTRODUCTION. MAKING, OWNING, CONNECTING: CRAFTS AND INFORMATION

Abstract author(s): Gorgues, Alexis (Independent researcher) - Brysbaert, Ann (Leiden University, Faculty of Archaeology; Netherlands Institute at Athens)

Abstract format: Oral

Making is a key component of human identity, one that is embedded in individuals, small and large groups and in society at large, and even in institutions. Crafting, then, is both the chaîne opératoire of making from a raw material to

a finished item, and the making of personal self-identity and, in extension, of belonging to a community, a corporate group, a network. In psychology, the processes that lead to identity formation in this context have been assigned to a level of 'ownership' (Pierce et al. 2003; see also Brysbaert and Hochscheid 2021): ownership developed towards a range of material and immaterial objects. This ownership sits primarily at three levels: (1) self-identity in which objects serve as a material expression of people's identity in relation to others: e.g. passing on tools through generations; (2) efficacy and effectance as a way of having control over and impact on one's environment, e.g. knowledge on where to mine for ores. That second factor lays the basis for (3) people's sense of belonging grounded in place, e.g. owning a bike in the Netherlands.

In addition to this 'ownership' level, craft is also active in support of non-verbal communication: a crafted good, made by someone else than his/her owner, and potentially somewhere else, can carry information over long distances, to other cultural areas and spheres, and where it can be (mis)understood. Having the cultural keys to decipher or interpret this information (functional, technical, iconographic, institutional, etc.) is a way to connect oneself, directly or remotely, to a network, an institutional framework (and therefore a policy), a group structured by common practices (artisans making luxury items, elite members) in spite of being geographically dispersed.

This introduction will consider these different dimensions of crafting through several case studies, in order to provide ground for further discussion.

2 BUILDING INFORMATION: ARCHITECTURAL TRADITIONS OF MAINLAND GREECE AT THE END OF THE EARLY AND MIDDLE BRONZE AGES

Abstract author(s): Jazwa, Kyle (Maastricht University)

Abstract format: Oral

This paper highlights the potential of domestic architecture to materialize information about the construction event, the multi-generational building traditions of its inhabitants, and, in some cases, social group differences within a community. This is demonstrated with a single case study, the domestic architecture of mainland Greece at the end of the Early Bronze Age (Early Helladic [EH] III period) and in the Middle Bronze Age. From these periods, all published vernacular buildings were individually examined for the presence of nearly two hundred distinct construction methods and aspects of spatial organization. Groups of structures that were statistically determined to have had the greatest correspondence in these aspects most likely represent distinct networks of interaction among the inhabitants/builders in which the relevant construction knowledge was circulated, i.e., a "building tradition." The reconstructed building traditions and the collection of construction methods for each were further examined diachronically and contemporaneously alongside the broader archaeological evidence for contextualization.

With this survey, two distinct and coherent building traditions that co-existed at individual settlements were identified. Over time, the differences between these groups diminished until the two traditions merged. It is argued that the initially dichotomy may be material evidence for the settlement of formerly mobile groups alongside an established sedentary population. After several centuries of co-habitation, the materialization of this historic event(s) disappeared. This study also shows that at least one of these groups may have possibly leveraged a specific building form, the apsidal plan, as an emic marker of affiliation, because buildings of this type are exclusively constructed in just one of these building traditions. As such, this case study also highlights the tension/relationship between information conveyed by an object's form and in the less visible traces of construction.

3 FINGERPRINT EVIDENCE FOR FEMALE POTTERS IN LATE BRONZE AGE CANAAN: THE DEMOGRAPHICS OF POTTERS AND DIVISION OF LABOUR AT BURNA

Abstract author(s): Ross, Jon - Shai, Itzick (Ariel University) - Fowler, Kent (The University of Manitoba) - McKinny, Chris (Gesher Media)

Abstract format: Oral

Techno-stylistic studies in ceramic analysis have largely focused on characterising production groups, based on the similarity of various objects and how they were made. The demographics of potters and the division of labour often remain enigmatic in current chaîne opératoire research. A growing number of biometric studies have demonstrated the potential of fingerprints preserved on ceramic surfaces for classifying the age and sex of potters. There are few fingerprint studies that combine both age and sex determination. In this paper, we use a recently introduced identification matrix to model labour divisions based on 52 fingerprints preserved on a diverse range of objects (figurines and vessels) from the Late Bronze Age II stratum at Tel Burna. The sample includes objects from the recently exposed Canaanite cultic enclosure dated to the 13th century bce. Based on broad ethnographic considerations, it is suggested that women were the principal potters in Canaanite society. Our fingerprint study tests this hypothesis with regards to who made pottery for cultic use, at a time when city-states were under the influence of Egyptian New Kingdom imperialism. We identify patterns in age categories and a sexual division of labour for the manufacture of select ob-

jects and vessel types. Our results provide the first compelling insights into the social relations of pottery production at a time when Egypt exercised hegemony over the city-states of the Southern Levant.

4 SPECIAL CONTAINERS FOR THE DEAD? CREMATION BURIALS WITH(IN) SPECIAL VESSELS IN THE BRONZE AND EARLY IRON AGE ACROSS EUROPE

Abstract author(s): Brinkmann, Johanna - Kneisel, Jutta (Institut fuer Ur- und Fruehgeschichte Kiel)

Abstract format: Oral

This contribution presents the outline of a research project that aims to investigate known routes and channels of exchange, together with changes in Europe in technical, ideological and social domains. These fields incorporate religious ideas, cosmological models and political concepts, technology in the form of tools, skills and processes as well as customs, ritual practices and habits. Building on existing catalogues and collections the transfer of knowledge is traced across Europe analysing different forms of Bronze and Early Iron Age cremation burials, which have been deposited with or within special vessels. These include face-, house- and box urns (Kastenuernen), wagon shaped cauldrons (Kesselwagen) as well as urnfield and Hallstatt wagon burials. In addition, a new analysis of the ribbed bronze buckets (Ciste a Cordoni/Rippenzisten) is presented, which at least in some cases served as a special form of container for the human remains of the deceased. An analysis of the distribution of these cremation burials with special forms of ceramic urns or bronze vessels and artefacts will be able to trace knowledge transmission and exchange through Europe and facilitate the identification of ideological changes in the Late Bronze and Early Iron Age.

5 CRAFTING AND CONSUMING SOS AMPHORAE: TECHNOLOGY AND NON-VERBAL TRANSMISSION CONCERNING MAKERS AND CONSUMERS

Abstract author(s): Bartlet Balicki, Holly (Institute of Nanoscience and Nanotechnology, NCSR „Demokritos“) - Chryssoulaki, Stella (Hellenic Ministry of Culture and Sport) - Pappas, Ioannis (University of Crete) - Hein, Anno - Kilikoglou, Vassilis - Day, Peter (Institute of Nanoscience and Nanotechnology, NCSR „Demokritos“)

Abstract format: Oral

Attic SOS amphorae, produced between the second half of the eighth century and the first half of the sixth century BCE, are large wheel-made vessels with a fine fabric and distinctive painted external decoration. The choices made in production and decoration are crucial for the information the vessel transmits, both in their place of production and the many places of consumption throughout the Mediterranean and Black Sea areas. Although very large vessels, SOS amphorae are comparable in their clay choices, finish and firing to fineware vessels from Attica, and this contrasts both with similar amphorae in neighbouring areas of production and with the local production of other pottery types.

This paper presents a characterisation of Attic SOS amphorae within a broader ceramic study of Attic pottery production in the Late Geometric and Archaic periods, analysing samples from the Phaleron Delta cemetery excavations in Attica, Greece. Clay selection, manipulation, forming and firing practices are studied through thin section petrography, scanning electron microscopy (SEM-EDS), mechanical properties testing and finite element analysis (FEA) to consider the design and technology of the vessel and its key role in communicating to various audiences.

In contrast to contemporary maritime transport containers, such as the Corinthian Type A amphora, the technological characteristics of the Attic SOS amphora are distinctive, and perhaps unexpected for such a large vessel. As storage and/or transport containers, Attic SOS amphorae convey not only information about the quantities, origins and qualities of their contents, but also their link to fineware pottery production and commensal activities, especially drinking. The similarities of Attic SOS technology and decoration with fineware pottery, compared to other contemporary Attic ceramic technologies shows not only their production by different groups of potters, but is a social choice, with deep implications for value, meaning and differing perceptions.

6 CHAINE OPÉRAIRE AND 'SPHERES OF EXCHANGE'. RECONSTRUCTING SOCIAL INTERACTION FROM POTTERY ASSEMBLAGES IN PRE-ROMAN CENTRAL ITALY (600-400 BC)

Abstract author(s): Dominici, Corso (University of Oxford)

Abstract format: Oral

When assessing the period comprised between 600 and 400 BC in which a system of interconnected city-states developed and flourished in central Italy, scholars usually focus on urban realities and their elites. Datasets from rural and marginal areas are overlooked since they often consist of materials difficult to assess—such as kilos of coarse potsherds—while considerably lacking more telling finds—such as inscriptions, fine pottery productions, coins, etc. So, despite a wealth of archaeological records yet to be tapped by academia, we still do not know how these rural areas related to the nearby city centres, and most of all we do not know much about the rural society itself. This paper

contributes to filling this gap by presenting the results of a thorough technical analysis recently performed on the totality of the pottery assemblage coming from the settlements recorded in two neighbouring valleys in the inner Apennines—Casentino, the upper Arno valley, and Valtiberina, the upper Tiber valley. Three tons of ceramic material from 38 sites dated between 600 and 400 BC were assessed using the chaîne opératoire approach, to implement a network analysis of the diffusion of techniques of production and pottery goods with different functions, among neighbouring, coeval settlements. Three differential networks of production and exchange were thus discovered. This paper argues that these differential networks are in fact ‘spheres of exchange’ (see Brondino-Pompeo 2021, cfr. Kopytoff 1986), pertaining to the supply of different needs among the local communities. In this nick of the woods, this supply came concurrently from professional workshops and house productions. These spheres of exchange are thus descriptive of a lively, changing, rural society in which a basic knowledge of production was commonplace.

7 **‘PROSTHETIC’ IDENTITIES – SPEAKING OBJECTS AS EXTENSIONS OF THE HUMAN SELF**

Abstract author(s): Kretschmer, Julia (University of Basel)

Abstract format: Oral

With the birth of writing in the second half of the eighth century BCE, several objects start to speak by themselves. These ‘oggetti parlanti’ informed their reader about a variety of subjects, including signatures of their makers, threatening statements of ownership, acts of dedicating something precious to a god, and the materialisation of grief for a deceased loved one – and by doing so, they used either a verb form in the first person (‘I’) or the personal pronoun (‘me’), thus declaring themselves as ‘actants’. The basic aim of this paper is to return to this intriguing group of objects and reassess previous assumptions about whose identity was expressed through these autodeictic inscribed objects. By combining the purely verbal with the non-verbal transmission of information, it is envisaged to explore the tension between the identities of the speaking thing and the reading/reciting individual and to clarify whether those identities were incompatible or complementary to each other. The inherent non-verbal information of these objects (material, shape, ergonomics, function, praxeological context), which was only sporadically addressed in previous research, is essential for understanding the ways in which human and non-human entities interacted with each other and articulated their multiple identities.

8 **A “POTTERY BALL OF MASKS”: IDENTITY, SELF-REPRESENTATION AND IDEOLOGICAL NARRATIVES IN SOUTHERN IBERIA THROUGH THE LATE 1ST MILLENNIUM CERAMICS**

Abstract author(s): Sánchez Moral, Carmen María (Universidad Autónoma de Madrid)

Abstract format: Oral

The main object of this paper is to address the assumption and integration of foreign ceramics - mainly kitchenwares and tablewares-, shapes and new foodways, and their use as a way of self-representation.

In order to do so, we will focus on a special high density area as for trade and cultural exchanges, a real crossroads due to its geostrategically privileged location between two continents and two seas: the so-called Circle of the Strait of Gibraltar -whose ancient pottery has been the object of my PhD Thesis-. However, although it constitutes an optimal case of study, further examples from other Mediterranean areas and even different timeframes will also be considered as (ethnographic) parallels.

The chronological framework of this study will be the transition from the Late Punic to the Roman world, a period of syncretism, cultural hybridisation and population movements. These processes can be perfectly traced back through the study of ancient foodways and the ceramological examination of cooking pots and tableware pottery when put in the light of an interdisciplinary, holistic and diachronic perspective, given their nature as major yet silent witnesses of daily culinary practices -crucial social markers.

Finally, we will take into account not only the materiality of the archaeological record -technology, shape, typological evolution...-, but also other social aspects such as cooking methods, commensality and taste.

The analysis of the “dialogue” between local and imported ceramic productions, that is, tradition and innovation, and subsequential phenomena such as reinterpretation, imitation and resignification, allows us to infer and understand identities construction mechanisms and the following dynamics of weaving new social narratives.

A. **BRONZE AGE DAGGERS FROM THE LOWER AND MIDDLE COURSE OF THE TUNDZHA RIVER, BULGARIA**

Abstract author(s): Valchev, Todor (Regional historical museum)

Abstract format: Poster

The Tundzha River passes through the territory of south-east Bulgaria. The Lower and Middle courses of the river flows through the Yambol region. The Tundzha River valley represents a very important passage, which connects the

Aegean coast with the lands north of Stara Planina Mountain and the Danube River Basin. The Balkan Peninsula is a natural cross-road of cultural influences from Mediterranean Sea, Central Europe and South Russian steppes.

The aim of this poster is to present three bronze daggers from the fund of Regional historical museum in Yambol. The first one has riveted form, Aegean in origin and is dated from the Early Bronze Age. The second and the third ones have tanged form, North-Pontic in origin and are dated from the Late Bronze Age.

Daggers were a common type of weapon throughout all phases of the Bronze Age. With the development of warfare, they became a symbol for warriors. In most cases, they are found in burial mounds as private objects. The presence of weapons south or north of their common area shows the mobility of people, objects and ideas during the Bronze Age.

530 EURASIA BEFORE AND AFTER THE 8.2 KA BP EVENT - A SIGNIFICANT HORIZON OF CULTURAL CHANGE? [PAM]

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Rabuñal, José Ramón (Instituto Universitario de Investigación en Arqueología y Patrimonio Histórico - INAPH, University of Alicante; Department of Archaeology and Heritage Studies, Aarhus University) - Riede, Felix (Department of Archaeology and Heritage Studies, Aarhus University) - Manninen, Mikael A. (Eco-systems and Environment Research Programme and Helsinki Institute of Sustainability Science - HELSUS, Faculty of Biological and Environmental Sciences, University of Helsinki) - Fernández-López de Pablo, Javier (Instituto Universitario de Investigación en Arqueología y Patrimonio Histórico - INAPH, University of Alicante)

Session format: Regular session

The Early Holocene was a period of climate amelioration, yet paleoclimate records show punctuated episodes of climate change. Premier among these is the '8.2 ka BP event'. While centered on 8.2 ka BP, the duration of this abrupt cooling oscillation was likely much longer, and its onset reaching back to 8.4 ka BP. The synchronicity of the event across the Northern Hemisphere seems undisputed, but its specific regional climatic signature appears to have varied strongly. In some places, temperatures dropped sharply and precipitation decreased; elsewhere, sea-level rose or seasonality became more pronounced. The magnitude of these effects and how they triggered ecological and societal change appear to have been variable across Eurasia. Given this spatial variability, it is likely that this event would have had both positive and negative consequences on the exploited ecosystems, regarding resource availability and distribution, environmental productivity and carrying capacity. These variable environmental characteristics would in turn have imposed different limiting factors and adaptive pressures on contemporaneous human communities. This session seeks to bring together researchers from across Eurasia dealing with the impacts of the 8.2 ka BP event on human socio-ecological systems. Our aim is to take stock of the climatic, ecological, and cultural signals associated with this episode of within-Holocene climate change. We invite presentations focused on different ecological settings, and on different topics such as settlement patterns, subsistence, technology, or palaeodemography. The goal is to together review the variability of palaeoecological effects of the 8.2 ka BP event across Eurasia, and against this background to discuss the range of human responses to it. Our ambition is to chart the variable archaeological signatures of the adaptive strategies taken during this time of climatic upheaval, along with showcasing state-of-the-art methodological approaches and research designs able to address questions of resilience, vulnerability and human impacts.

ABSTRACTS

1 THE 8.2 KA BP COOLING EVENT AND THE DEVELOPMENT OF EARLY VILLAGE LIFE IN NORTH CHINA: PROCESS AND VARIABILITY

Abstract author(s): Tu, Dongdong (ShanghaiTech University)

Abstract format: Oral

Current archaeological data has demonstrated that by some 8,000 years ago, sedentary communities whose subsistence relied on, at least a partly, domesticated species have been well established in North China. This vital transition emerged after the period of a climatic cooling event at 8.2 ka BP. How this climate event affected the transition to Neolithic lifeways within various ecological settings of North China? And how people responded to this climate fluctuation and how such responses generated the interlocked social formations? This paper attempts to explore the interplay between humans' adaptations and climate change before and after the 8.2 ka BP event in four subregions of North China: Northeast China, Northwest China, the Central Plains and Shandong. The analysis indicates that because of various environmental characteristics regarding topography and resource availability and distribution, the 8.2 ka BP cooling event affected these subregions at varied degrees. In addition, prior to the cooling event, people have developed different coping strategies for climate fluctuations during the late Pleistocene and early Holocene period in

these subregions. The pre-existing changes in human adaptive behaviors, combined with environmental variability, present the complex transitional process to early village life in North China.

2 FORTS IN THE TAIGA – ON THE DIVERSIFICATION OF HUNTER-GATHERER WORLDS IN WEST SIBERIA 8000 YEARS AGO

Abstract author(s): Piezonka, Henny - Schreiber, Tanja (Christian Albrechts University Kiel)

Abstract format: Oral

The seemingly remote expanses of the North Eurasian landmass have remained largely beneath the radar of international archaeological research. However, in the Western Siberian taiga c. 8000 years ago, local hunter-gatherers built what are likely the world's oldest forts. These incipient defensive structures are part of an unprecedented, non-farming package of innovation taking hold of the Western Siberian basin at the end of the 7th millennium cal BC. A population expansion, settlement intensification, and technical innovation including pottery bear witness to major socio-economic, political and cultural transformations. Broadly coinciding with the 8.2 ka global climatic event, this phenomenon opens up a unique new laboratory on human social responses to landscape vulnerability and to the ecological challenges of climate change. Over the last years, our Russian-German team has started to investigate this conundrum through new fieldwork and multi-disciplinary analyses. We pursued four interrelated research objectives: (1) How did global climatic fluctuations in the Early Holocene such as the 8.2 ka cooling event impact on climate and environmental change in Western Siberia? (2) What changes in resource availability are discernible from the archaeological record, is there evidence of economic intensification? (3) How did settlement patterns and seasonal occupation change compared to the preceding period, and is there evidence for increased territoriality? (4) How are the complex settlement systems and fortifications related to incipient hunter-gatherer socio-political diversification, both within the societies and on an intergroup scale? This work has started to fill a white spot in the study of prehistoric Trans-Eurasian connectivity by opening up Western Siberia as a key region within wider networks. Further work is needed on the early Holocene environmental history of this Sub-Arctic inland setting in order to better understand the potential impact of the 8.2 ka event and a unique range of human social responses.

3 NOW YOU SEE IT, NOW YOU DON'T: ELUSIVE HUMAN RESPONSES TO THE 8.2 KA EVENT IN FENNOSCANDIA AND BEYOND

Abstract author(s): Manninen, Mikael - Eronen, Jussi - Kaaronen, Roope - Tallavaara, Miikka (University of Helsinki)

Abstract format: Oral

Not many studies have explicitly tackled human responses to the 8.2 ka event in the Fennoscandian Peninsula. Those that have, do not necessarily find clear responses, while others detect responses that are deemed too minor or inconclusive by other researchers. In yet other cases, evidence that first appears clear is later found to be statistically insignificant. This has led some to assume that Mesolithic hunter-gatherer adaptations had inbuilt resilience that helped them to counter climatic and environmental deterioration without a need to change their subsistence strategies or organizational structure at any significant level. In this paper we discuss some of the Fennoscandian cases, present long term population trends and mechanisms used by later hunter-gatherers in the region to counter risk and resource fluctuation, argue, based on these examples, that change was most likely inevitable and resilience against climatic downturns is an unlikely explanation for our inability to detect more responses to the event from the archaeological record, and finally try to shed light on the underlying question of significant vs. insignificant change.

4 HUMAN POPULATION SIZE RESPONSE TO 8.2 KA BP EVENT IN FENNOSCANDIA

Abstract author(s): Tallavaara, Miikka - Pesonen, Petro (University of Helsinki) - Jørgensen, Erlend (Norwegian Institute for Cultural Heritage Research) - Manninen, Mikael - Salonen, J. Sakari (University of Helsinki) - Schenk, Frederik (Stockholm University)

Abstract format: Oral

High-resolution paleoenvironmental and archaeological proxy records in Fennoscandia offer great potential to study human responses to past environmental variability including Early Holocene climate events. Here, we use data from Northern Norway and Finland to track human population size responses to the 8.2 ka event across a north-south transect from the coast of Barents Sea to southern Finland. While the 8.2 ka event is widely recorded in circum-North Atlantic paleoclimate proxies such as southern Fennoscandian pollen records, in northern Fennoscandia, the proxies have generally failed to detect the event. However, new high-resolution proxy data from NE Finland indicate a strong tree cover disturbance at 8.4-8.0 ka, showing that the climate event reached the European high latitudes. This new data also suggests that the forest disturbance was possibly related to increased drought during the event. As seen in different archaeological population size proxies, the responses of human populations to the 8.2 ka event appear to have been relatively small. We found a stronger population response in coastal regions than inland. In the latter, we

were not able to detect a significant response. Furthermore, we modeled the amplitude of hunter-gatherers' expected response to short-lived climatic perturbation using ethnographic data. We also simulated radiocarbon date data to evaluate the potential amplitude of human population responses seen in archaeological proxies. Our results suggest that calibration influences the signal of the population response to Early Holocene climate events in radiocarbon date-based population proxies by creating spurious responses and/or masking true, but low-amplitude responses. The lack of consistently significant signal of population response in Fennoscandian data nevertheless indicates that climate changes around 8.2 ka did not induce profound human population size responses.

5 HUMAN IMPACTS OF THE 8.2KA EVENT ON MESOLITHIC FORAGERS IN WESTERN DENMARK

Abstract author(s): Riede, Felix - Yaworsky, Peter (Department of Archaeology and Heritage Studies, Aarhus University) - Andreasen, Kathrine (Museum Odense)

Abstract format: Oral

The so-called '8.2ka event' had a major but also regionally variable climatic impact in the Northern Hemisphere. In Denmark, it appears to have had an influence on lakes and rivers, which were essential landscape features for contemporaneous foragers. In western Denmark there is also evidence for a marked increase in sand drift. Around the same time as the 8.2ka event, the Storegga tsunami affected the North Sea Basin. While there is considerable debate about the loss of lives and livelihoods associated with this event, we here explore whether the combination and convergence of these event-like environmental changes lead to changing land-use amongst contemporaneous Maglemosian foragers in western Denmark. Placed in a theoretical framework derived from disaster risk reduction research, we focus in particular on sites in the catchment area of the River Gudenå but also draw on regional-scale proxies of population processes around this time (e.g., site counts, radiocarbon dates). In combining these disparate lines of evidence, we explore the possibility of a major reorientation from inland to coastal, and from networks reaching westwards towards networks with a preferential eastern orientation. Interestingly, the time of the 8.2ka event broadly coincides with a traditionally recognized cultural transition from the so-called Maglemose culture to the Kongemose culture, raising the question of whether the environmental upheavals around this time are causally implicated.

6 TESTING HUMAN RESILIENCE TO THE COMBINED EFFECTS OF SEA LEVEL RISE AND THE 8.2 KA CAL BP EVENT IN MEDITERRANEAN-IBERIA

Abstract author(s): Fernández-López de Pablo, Javier - Moya Ruiz, Raquel (I.U.I en Arqueología y Patrimonio Histórico - INAPH, University of Alicante) - Sánchez García, Carlos (Department of Geography, University of Barcelona. FluvAlps-PaleoRisks Research Group; IPHES, Catalan Institute for Human Palaeoecology and Social Evolution) - Rabuñal, José Ramón (I.U.I en Arqueología y Patrimonio Histórico - INAPH, University of Alicante; Department of Archaeology and Heritage Studies, Aarhus University) - Gómez-Puche, Magdalena (I.U.I en Arqueología y Patrimonio Histórico - INAPH, University of Alicante)

Abstract format: Oral

In the Iberian Mediterranean region, the 8.2 ka cal BP climatic event has been recurrently related to a significant increase of aridity conditions, forcing changes in Late Mesolithic settlement patterns and human mobility systems.

However, in this area of Southern Europe, the inferential framework about societal responses to this event of abrupt climatic change is strongly biased towards the analysis of the radiocarbon evidence from inland sites (e.g. The Ebro River Valley).

Yet, the combined impacts of gradual sea level change and aridity on Mesolithic communities still remain poorly understood.

In this contribution, we present the results of a multi-proxy approach applied to the central sector of the Iberian Mediterranean region (Alicante and South Valencia provinces). First, we will discuss novel high-resolution XRD evidence of inland endorheic-lake sediments, which allow to fine tune the chronological resolution of aridity patterns and its palaeohydrological signature in the study area. Then, we will review recent works about the reconstruction of postglacial sea level rise and the changing configuration of coastal biotopes. Finally, we will present an integrated approach focused on zooarchaeological and palaeodietary evidences, the spatio-temporal distribution of archaeological sites and ¹⁴C palaeodemographic modelling.

Our results suggest a negative impact of sea level rise and aridity patterns on environmental carrying capacity during the Early to Middle Holocene transition, leading to a significant decrease in population size during the Final Mesolithic.

7 NORTHERN BRITAIN BEFORE AND AFTER THE 8.2KA EVENT: MULTIPLE ENVIRONMENTAL IMPACTS AND LONG TERM CONSEQUENCES

Abstract author(s): Mithen, Steven (University of Reading)

Abstract format: Oral

Late Glacial hunter-gatherers made periodic visits to the region now designated as northern Britain, leaving a sparse and little understood record of their presence. Permanent occupation occurred in the Early Holocene, with the first in-situ and dated Early Mesolithic activity located at Rubha Port an t-Seilich, Isle of Islay, western Scotland in 2022. Radiocarbon dates indicate a gradual population increase up until the mid- and later 9th century BP. Multiple environmental events caused a dramatic population collapse, these involving the rise in sea level, 8.2ka abrupt climatic event and the storrega tsunami. Untangling the respective impact of these events is challenging, and they need to be considered as part of a single package of continuous environmental change to which humans responded. They had both short term impacts and long term consequences reaching to the arrival of Neolithic immigrants at the start of the 6th millennium BC. Rubha Port an t-Seilich provides a continuous record of the Mesolithic presence during this period of climatic, cultural and population change.

531 MIGRATION AND ARCHAEOLOGY AFTER THE 3RD SCIENTIFIC REVOLUTION: ADNA, ISOTOPES AND NEW THEORETICAL PERSPECTIVES

Session theme: 4. People of the Present – Peopling the Past

Session organisers: McSparron, Cormac (Queen's University Belfast) - McLaughlin, Rowan (Maynooth University) - Cassidy, Lara (Trinity College Dublin)

Session format: Regular session

Migration, the permanent change of residence by an individual or group, was once a key explanatory mechanism for change in the archaeological record. Migration is distinct from the “mobilities paradigm”, which looks at more generalised movements of peoples, technologies and ideas. With the advent of the “new archaeology”, and specifically from David Clark’s 1966 paper onwards, archaeologists have played down the importance of migration as a driver of cultural change. Some archaeologists eschewed the concept, believing it a hangover from an outdated culture-history paradigm. Others realised that whilst migration had utility as a concept, migration, its forms and how they could be identified in the archaeological record, were poorly understood by archaeologists. Change began in the 90s with the work of David Anthony, who developed models of different migration types and their correlates. More recent work has focused on how migrant groups expressed identity materially, and how the agency of migrant groups affected how they display identity through material culture, or influenced the material identity of host communities. Nevertheless, migration has remained something of an unwanted child of archaeology despite migration theory having provided explicit models which can be compared with the large amount of scientific data obtained over the last two decades, from analysis of radiocarbon dates, stable isotopes and aDNA, data which often forms patterns seemingly only explainable within a migratory framework.

This session calls for papers which examine migration as a driver of cultural change over time. These can include papers which look at direct evidence of migration from the new techniques of the “3rd scientific revolution”, papers which seek to broaden our understanding of migration and its correlates, or papers which adopt theoretical models of migration to predict or explain patterning in the archaeological record. We particularly invite contributions where two or more approaches are combined.

ABSTRACTS

1 AN OVERVIEW OF ARCHAEOLOGICAL THEORIES OF MIGRATION

Abstract author(s): McSparron, Cormac (School of Natural and Built Environment, Queen's University Belfast)

Abstract format: Oral

The term migration has sometimes been used loosely. Archaeologists have often had a naive understanding of migration as wholesale movement of peoples, with their animals and artefacts, from one territory to another with dramatic cultural changes for the host region. This simplistic model limited the ability of migration to explain past events, and coupled with its overuse by cultural-historical archaeologists diminished migration’s reputation as an explanatory mechanism. In the 90s however, archaeologists, led by David A. Anthony, began to re-look at migration. Anthony used the work of geographers and sociologists like Ravenstein and Lee to build more realistic models of different types of migrations, how they functioned, and what types of signatures they might leave for archaeologists. Successive work by Stefan Burmeister built on Anthony’s explicit models of migration and suggested that migrants would display more adaptation to the host communities in their external life, what he called the “external domain” and display aspects of

their traditional culture in their private life, “internal domain”. Further work by McSparron, Donnelly, Murphy and Geber, saw the agency of the migrant group as a mechanism for linking different scales of migration in a single body of theory with “group agency” as a mediator of how much the internal and external domains reflected the host or migrant culture, noting how with migrations of powerful groups, it was the host culture which may adapt its external domain to fit the migrant culture and continue its own practices in the internal domain. This paper will give an outline of the development of migration theory, and things we may need to think about to allow migration theory to successfully integrate with the data becoming available from the new techniques associated with the 3rd scientific revolution.

2 LATE UPPER PALAEOLITHIC GENOMES FROM THE SOUTH OF FRANCE

Abstract author(s): Bradley, Daniel - Breslin, Emily - Matttiangeli, Valeria (Trinity College Dublin) - Langlais, Mathieu - Banks, William - Ducasse, Sylvain (CNRS, University of Boreaux) - Cassidy, Lara (Trinity College Dublin) - Manica, Andrea (University of Cambridge)

Abstract format: Oral

The genomic makeup of Europe from the end of the Last Glacial Maximum (LGM) is only beginning to be unravelled. In the Late Upper Palaeolithic of west Europe several distinct genetic ancestries have previously been reported. The first is associated with individuals from Magdalenian contexts in central Europe. The other, often named after the Palaeolithic Villabruna individual, represents the genetic ancestry which later formed the major ancestry fraction of the west European Mesolithic individuals. The processes by which these major genetic lineages of post-glacial Europe originated and admixed are only partially understood. The south-west of France is a key region in decoding these changes, as a region which may have been continuously occupied since the Aurignacian period. In this study we present six new shotgun sequenced genomes spanning over 10,000 years, from the end of the LGM to the beginning of the Holocene. Through the co-analysis of these genomes with existing genetic data we present a framework for population movements and contact during the late Upper Palaeolithic.

3 ROLE OF GENETIC RESEARCH IN ATHAPASKAN MIGRATION STUDIES

Abstract author(s): Lewandowska, Magdalena (Jagiellonian University)

Abstract format: Oral

The arrival of the ancestors of the Apaches and Navajo to the North American Southwest, the so-called Athapaskan or Apachean migration is one of the most widely discussed issue in American archaeology. Since the 19th century, after connections were discovered between the Athapaskan language family, potential routes, directions and causes of migration between the Arctic and Subarctic region (inhabited by the Northern Athapaskans) and the Southwest (inhabited by the Southern Athapaskans) began to be considered.

Another interesting issue are the connections that were formed between migrating hunter-gatherer Athapaskans and agricultural Pueblo that inhabited the Southwest. Whether they were friendly or hostile or, as often seems to be the case, we should mark them as “complicated”.

New methods of genetic research that emerged with the “3rd scientific revolution” shed new light on many aspects related to the Apachean migration. They allowed us to look differently not only at the migrating group but also its connections with both the Northern Athapaskans and the Pueblo.

In my presentation I aim to present the results of genetic research in context of understanding Athapaskan migration. I would also like to present the problems and challenges that we can face while applying those studies in North American archaeology.

4 THE IMPACT OF DNA RESULTS ON MODELLING THE MESOLITHIC-NEOLITHIC TRANSITION IN BRITAIN AND IRELAND

Abstract author(s): Sheridan, Alison (Dept. Scottish History & Archaeology,)

Abstract format: Oral

People have been debating the Mesolithic-Neolithic transition in Britain and Ireland for over a century. This archipelago is one of the last places in Europe to see agro-pastoral farming being established, with a gap of at least 700 years from when it was established on the near Continent. The debate has revolved around whether the prime movers for this radical change in lifestyle were the indigenous hunter-fisher-forager groups or migrant farming groups from the Continent. The advent of DNA results for Mesolithic and Neolithic individuals in Britain and Ireland, along with a growing database of DNA results for 5th and 4th millennium individuals on the Continent, has demonstrated that farming was indeed introduced by migrant farmers from the Continent - probably from more than one part of northern/NW France. Various misconceptions have arisen from the DNA work, principally the idea that there may be connections between Iberia and Britain/Ireland, or between Britain and Scandinavia. These will be addressed. The question of the reactions of indigenous communities to the incoming farmers will be discussed and a multi-strand

model of Neolithisation, from different parts of N/NW France to different parts of Britain and Ireland at various times between c. 4350 BC and 3800 BC, for various reasons and with varying reactions, will be presented.

5 - 70 YEARS OF RESEARCH. A GRAVE FROM THE CORDED WARE CULTURE, EASTERN MIDDLE SWEDEN

Abstract author(s): Carlsson, Tom (Arkeologerna SHM)

Abstract format: Oral

The grave with the two adults, an infant, and a dog is by far the best-preserved grave from the Corded Ware Culture (i.e. the battle- or boat ax culture) in Sweden. The discovery was made in 1953 and exhibited in the county museum as early as 1954. The burial with the three skeletons and the artefacts has been interpreted, discussed, and repeatedly reinterpreted for 70 years. The burial has been in a constantly ongoing scientific light.

Natural scientific analyses (a-DNA and isotopes) in recent years have provided new opportunities to shed light on who the people in the grave were, their relationship to each other, and their ancestry.

The data from natural science also highlights an important challenge for archeology: putting the numbers, calculations, and statistics into a social science perspective. After all, it was people who moved, interacted, negotiated, fought, got sick, and died.

The purpose of my paper is to briefly summarize the 70 years of research and put the scientific analyzes in a current archaeological context.

6 ANCIENT CATTLE GENOMICS TO EXPLORE MIGRATION ON THE WESTERN ATLANTIC EDGE OF EUROPE

Abstract author(s): Mullin, Victoria - Bradley, Dan (Trinity College, The University of Dublin)

Abstract format: Oral

The domestication of taurine cattle marks a significant period of time in human prehistory. The initial migration of cattle across Western Europe concluded with the movement of animals to the Western Atlantic Edge, the islands of Ireland and Britain. Since their domestication, cattle and humans have shaped one another. One route to explore the cattle:human relationship is the sequencing of ancient cattle nuclear genomes. We have sequenced a time series of 80+ ancient cattle genomes from Europe, with a specific focus on the Western Atlantic Edge, spanning from the Neolithic to the Middle Ages. This dataset provides a snapshot of the genetic diversity present in the past and allows for the comparison of animals across time and space, enabling us to identify changes in population structure and even selection of specific genes through time. We will apply population genomic techniques to these data to provide new insights into the prehistoric cattle of the region.

7 STRAWBERRY TREE AS A POTENTIAL MARKER FOR BRONZE AGE COPPER MINING EXPLORATION ROUTES IN NW EUROPE

Abstract author(s): Sheehy Skeffington, Micheline (University of Galway) - Scott, Nick (Teach na Tuisceana)

Abstract format: Oral

The distribution of Strawberry Tree, *Arbutus unedo*, in Ireland and Britain is strongly associated with Bronze Age copper mining activity. The largest population, around Lough Leane, Killarney, surrounds the first copper mine in northern Europe, at Ross Island. Other smaller populations in south-west Ireland have Bronze Age copper mines nearby and the population on the Great Orme, in north Wales, is adjacent to the largest Bronze Age copper mine in Britain. The Ross Island excavation and a palynological investigation both date its arrival at around 4,300BP. A previous genetic study suggests this Mediterranean tree was originally brought to Ireland from north Spain, where copper mines were active up to this date, an introduction which appears to be described in Irish myth. As plant ecologists, we will present what we know about this species, its ecology and behaviour, that may be pertinent to this apparent connection to Bronze Age copper mining activity. Strawberry tree is one of sixteen Irish plant species with disjunct 'Lusitanian' distributions indicating a possible ancient maritime trade route between western Ireland and the Iberian Peninsula. A more thorough genetic study we are currently undertaking includes all Irish populations, as well as several in Britain and Brittany.

8 RADIOCARBON EVIDENCE INDICATES THAT MIGRANTS INTRODUCED FARMING TO LATE NEOLITHIC NORWAY

Abstract author(s): Solheim, Steinar (Museum of Cultural History University of Oslo)

Abstract format: Oral

At the start of the third millennium BCE, differences were present across the European continent in terms of subsistence, material culture and burial customs. Foragers inhabited the Scandinavian Peninsula and the eastern Baltic region while farming groups were settled across the rest of Europe. Similarities occurred in material culture and cultural practices over large areas, but the archaeological material also informs us about a heterogeneous and diversified cultural development with local adaptations.

In Southern Norway, the region in focus here, important changes took place in the second part of the third millennium. Farming was introduced late to this region, and robust evidence for farming is not seen until after 2400 BCE. This is often explained as a rapid transformation of society, evidenced by the introduction of new technologies, new modes of production and an economy based on the farm as a production unit. Migration is suggested as the most likely explanation, but no genetic studies or isotope analysis provide information to the archaeological material regarding this.

A possible way to obtain information on demographic development is to apply radiocarbon dates as a population proxy and use this to explore local demographic regimes, including population fluctuation and growth rates. Here, I aim to investigate the local demographic development and consider how population dynamics can explain the economic and cultural shift in third millennium Southern Norway.

The analysis will estimate a precise as possible start of farming and introduction of two-aisled houses by applying Bayesian age models. Secondly, I use radiocarbon dates to generate a summed probability distribution plot to infer local population dynamics. Finally, I estimate the long and short term growth rates to investigate how population growth relate to cultural change and discuss this in terms of migration into the region.

9 EMIGRATION AS A FACTOR IN THE DECLINE TO THE IRISH DOWRIS C 'DARK AGE'

Abstract author(s): Scott, Brian - McSparron, Cormac (Queen's University Belfast) - McLaughlin, Rowan (Maynooth University)

Abstract format: Oral

The Later Bronze Age (LBA) is known as one of the most prolific periods in Irish prehistory, to which large numbers of artefacts, settlements, major fortifications, and burials, have been attributed. It is also a time when the output of metalworkers reached heights of technical excellence, especially in the field of weaponry. A characteristic of the earlier part of the period is the palynological evidence consistent with an increasingly intensively farmed landscape. Characteristic also is the growing body of evidence for conflict between power blocs, which may be interpreted as resulting in no small part from competition for a range of resources.

After several decades of well-funded rescue excavations in Ireland, and a commensurate increase in the number of prehistoric radiocarbon dates, summed probability distributions of this dataset seem to indicate that the period saw major population growth also. But then something very unusual seems to happen in the 9th – 8th centuries BC, during which the number of radiocarbon dates declines rapidly, and remains much lower than its LBA peak for several centuries. We note that this comes some two centuries after the apparent cessation of native mining and smelting/casting of Irish copper ores.

In this paper, we will examine the reasons for this decline, and will suggest that – rather than population decline caused primarily by famine or disease or climate deterioration – Ireland may well have seen significant out-migration to neighbouring countries, quite possibly with Irish metal traders acting as scouts for larger migrant groups. We suggest that this is evidenced by various indicators of Irish metalworking practice abroad, and the appearance in Ireland of early native ironworking represents technologies brought to Ireland via this expanding network of international contacts.

10 LINGUISTIC FACTORS IN THE CELTICISATION OF THE WESTERN ARCHIPELAGO AND THE GAELICISATION OF IRELAND

Abstract author(s): Stifter, David (Maynooth University)

Abstract format: Oral

Until recently, language-internal considerations (e.g., diachronic phonology and morphology) and archaeology furnished the main arguments for theories about the time horizon for the arrival of Celtic languages on the islands of Britain and Ireland. But the lack of archaeological traces of late immigration, and the striking similarities of the ancient stages of the Insular Celtic languages with the ancient Continental Celtic languages, have proved to be irreconcilable with each other.

Two new exciting and potentially powerful sources of information offer new insights into the problem. Ancient DNA (aDNA) analysed in palaeogenetics shines a light on prehistoric population movements. In the field of historical linguistics, refined methods of research into substratums and lost precursor languages allow glimpses into the distribution of undocumented prehistoric languages. The new data challenge assumptions in both traditional approaches: aDNA studies have once and for all put to rest theories about Hamito-Semitic substrates in the Western Isles, and language contact studies and substratum research leave little room for ideas of Celtic having a deep history in the West. However, the problems do not stop with the arrival of Celtic to the islands, but they continue up to the dawn of the Middle Ages. Questions that need to be addressed in meaningful explanatory models include: How did the languages evolve on the islands and how did they achieve their characteristic appearance? What are the best models to account for the rapid phonological transformations of the Insular Celtic languages around the middle of the 1st millennium A.D.? Why does Old Irish look so homogenous at the time of its first written documentation?

In this talk I want to set out the historical-linguistic factors that need to be taken into consideration when trying to interpret the data about Late Bronze and Early Iron Age population movements and linguistic contacts.

11 MASS MIGRATION AND MICROHISTORIES IN EARLY MEDIEVAL ENGLAND

Abstract author(s): Gretzinger, Joscha (Max Planck Institute for Evolutionary Anthropology) - Sayer, Duncan (University of Central Lancashire) - Schiffels, Stephan (Max Planck Institute for Evolutionary Anthropology)

Abstract format: Oral

Migration has been a key focus for European early medieval scholarship for decades, with focus on its scale, extent, and impact. The process of moving places might have a profound impact on an individual, a community, or a way of life, even ushering in wider cultural change. In this context, ancient genomics has the power to identify both individual mobility and large-scale migration events, linking the emergence of genetic patterns to archaeological transitions and historically recorded events. However, by integrating large numbers of individuals from geographically confined sampling areas, ancient DNA research also allows to explore social structures such as kinship and site organization. Here, we present how recently published genomic data from 460 northwestern European individuals (including 278 ancient English) can provide insights into one of the most intensely debated events in British history, the Anglo-Saxon migration to England. Besides the demonstration of mass migration, we show how this data in combination with state-of-the-art population genetic methods and extensive archaeological context data can facilitate sociocultural inferences, revealing the interrelationship between ancestry and residence patterns or funerary practices, as well as consanguinity and intercontinental mobility in early medieval Britain.

12 THEORETICAL MODELS OF MIGRATION AND SOME PREDICTIONS FOR EMPIRICAL WORK

Abstract author(s): McLaughlin, Rowan (Maynooth University)

Abstract format: Oral

In response to the conference theme of 'weaving narratives' this paper represents an attempt to formalise archaeological narratives of human migration using simulation techniques. As a concept, the meaning of the term 'migration' is surprisingly fluid in archaeology and ancient genomics; it can refer to the appearance of new peoples or cultures over centuries, or the shifting geographies of human experience within a single lifetime. Whilst archaeological science is getting ever better at resolving these processes, there is little explicit attention of what happening at a granular level, and how these add up to the manifestation of signals of migration detectable in the archaeological record. This limits current work in archaeology and ancient DNA to the observational level, with little scope for testing hypotheses. Through mathematical and simulation (agent-based) modelling we explore a number of different migration scenarios. The models are then used to make predictions about patterns in archaeological data, and what the limits of knowledge of these past processes are when viewed through the lens of the archaeological record.

13 BRONZE AGE MIGRATION TO BRITAIN AND IRELAND: A VIEW FROM THE WEST

Abstract author(s): Cassidy, Lara (Trinity College Dublin)

Abstract format: Oral

Over the course of the 3rd millennium BC, northern Europe experienced large-scale migration from the Pontic steppe, resulting in major demographic, cultural and linguistic change. Steppe-related ancestry arrived in Britain and Ireland during the Chalcolithic and Early Bronze Age, associated with the Bell Beaker culture. In Britain, it has been suggested that this movement resulted in a 90% population replacement within centuries, although others have cautioned against catastrophism, arguing this was unlikely to have been a rapid process. Here, I contrast the emerging genomic picture for Britain with that of Ireland using 45 new whole genome sequences. Ireland differs from Britain in its uptake of Bell Beaker culture, with Beaker material mainly found in domestic and megalithic contexts, suggesting influence from an Atlantic cultural sphere. Crouched single burials appear a little later, c. 2150 BC, concentrated mostly in the north and east of the island. When genomes from crouched burials alone are considered, I estimate a

similar level of population replacement in Early Bronze Age Ireland as seen in Britain (85-92%). However, genomes from megalithic tombs show markedly reduced levels of steppe ancestry, a signal which persists until c. 1800-1600 BC. This suggests a level of demographic continuity across the Neolithic-Bronze Age transition in Ireland, with prolonged barriers to interbreeding between local and migrant groups. These barriers may have had a geographical, as well as cultural dimension, given that megalithic construction continued mostly in the western half of the island. Ireland retains lower levels of steppe ancestry compared to Britain into the Late Bronze Age. This is relevant for modelling Late Bronze Age migration into Britain, which experiences a dilution in steppe ancestry through time.

532 **SYMBOLIC BODIES – UNDERSTANDING THE SIGNIFICANCE OF DEATH AND THE DEAD IN PREHISTORIC NORTHERN AND WESTERN EUROPE [PAM]**

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Chaumont Sturtevant, Elisabeth - Crozier, Rebecca (University of Aberdeen) - Oxenham, Marc (Australian National University - ANU)

Session format: Regular session

Upon death, the individual body presents a non-avoidable and arguably, vital agent in the funerary process. Societies have had to adjust around a flexible calendar of death, forging attitudes and belief systems regarding mortality.

The deliberate choices made in handling the corpse from an array of treatments (e.g., inhumation, cremation, excarnation) have made the body a vital source of information. The body can become a tangible, symbolic gateway between the living and the dead. Such variations in manipulations and care of the body have led archaeologists to investigate rich theoretical frameworks, which include personhood, ancestral beings, and of course, the tempo of the mortuary practices themselves.

This session seeks to explore the agency of the body in death as the driver behind funerary practices from the Mesolithic through Iron Age Northern Europe. This topic includes discerning societal structural rules and traditions as well as the more personal and intimate gestures performed during the funerary process.

We would welcome contributions presenting micro or macro studies, applying hard sciences as well as theoretical approaches, examining how the circumstance behind a death (e.g., good death vs bad death) reveals itself in the physical remains, not just of the body, but through the context of deposition (e.g., communal vs individual – preservation vs destruction). The timeframe of interaction between the living and the body may speak to the relationship and role of the dead in the wider funerary landscape and cosmology.

Beyond the human body and its accompanying embellishments, topics on the role of floral and faunal remains associated with the burial are also of interest. Overall, this session aims to further explore the influence of Death on prehistoric societies in Europe.

ABSTRACTS

1 **FINAL FLIGHT? DEATH, FIRE AND RAPTORS IN BRONZE AGE MAINLAND SCOTLAND**

Abstract author(s): Chaumont Sturtevant, Elisabeth - Masson-MacLean, Edouard (University of Aberdeen) - Oxenham, Marc (Australian National University) - Crozier, Rebecca (University of Aberdeen)

Abstract format: Oral

Within the burial context, faunal remains may be ‘read’ through a variety of lenses; a companion in the afterlife, votive offering, totem, feasting debris - the inherent symbolism derives from the context of recovery. How might we ever hope to distinguish the rationale for their inclusion, if they are indeed intentionally included? Our interpretations become particularly problematic in the context of cremation burial. Disarticulated, warped, and fragmented by the ravages of the process, simply recognising the presence of faunal remains is challenging, never mind identification to species level.

During a recent analysis of cremated remains from Broomend of Crichtie Henge, a complex Bronze Age mortuary site in Aberdeenshire (Northeast Scotland), a singular large burnt bird phalanx was identified. The shape and size of the avian remains suggests a bird of prey, possibly a white-tailed or golden eagle. The importance of these apex predators in Bronze Age burials has been documented in the Scottish Islands but not on the mainland. The aim of this paper is to reflect on the significance of birds of prey for Bronze Age communities in mainland Scotland. These remains may suggest simple ornamentation with a value/status conferred by the danger inherent in obtaining such an object. More direct affiliations to specialist hunting behaviors including a protective allegory may also be inferred when deposited in children’s burials. This paper will explore not just the symbolism of the talon itself, but the significance of its depositional context.

2 THE ESKER OF THE DEAD – GRAVES AND BURIAL RITUALS ON NORWEGIAN HUNTING GROUNDS DURING THE EARLY IRON AGE

Abstract author(s): Stene, Katherine (Museum of Cultural History University of Oslo) - Boethius, Adam (Lund University)

Abstract format: Oral

Skavernodden is a prominent and steep esker that pushes out into a large lake in the wooded inland of southern Norway. This prominent part of the landscape was for several hundred years, during the Early Iron Age (ca. 50 BC–AD 550), used as a burial and ritual site. Archaeological investigations in 2016–2021 have uncovered several burials of various shapes and content and ritual activity areas.

Both the ritual activity area and the human burials include large numbers of highly fragmented animal bones and the burials often also include various types of artefacts.

The characteristic feature of the bone material is that it is highly affected by fire, crushed and heavily fragmented. Humans were cremated while the animal bones show a wider range of burning, from unburned to fully calcified. All evidence suggests a significant amount of preparation and work has been done connected to the burials and sacrifices.

The graves are not homogeneous – ranging from including only one single individual to several and both seniors, adults and infants have been identified. The animals included in the burial rituals mainly consist of wild animal species, with only very few domestic specimens present. Antlers and skulls from elk dominate the assemblage but bone fragments from bear skulls are also frequently encountered. The bear is represented by both unburnt teeth and fully calcified skull fragments while the elk fragments are mainly affected by fire on one side.

Here we will present the preliminary results of the investigations and the cultural and economic landscape where the site is found. A focus on how both human and animal remains were interred, ritualized, treated and deposited, in combination with over 60 radiocarbon dates enables a study of contingency, resilience and change during the 500 years of ritual practice at Skavernodden.

3 RECONSTRUCTING A PATH TO THE OTHERWORLD: A MULTIPROXY APPROACH TO THE RITUAL AT PAPROTKI CEMETERY, NORTHEASTERN POLAND

Abstract author(s): Karczewski, Maciej (Faculty of History and International Relations) - French, Katherine (University of Cardiff) - Banerjee, Rowena (University of Reading) - Karczewska, Małgorzata (OBESW) - Pluskowski, Aleksander (University of Reading) - Cywa, Katarzyna (Institute of Botany Polish Academy of Science in Krakow) - Mueller-Bieniek, Aldona - Budziszewski, Adam (Faculty of Archaeology Warsaw University) - Musiał, Adrianna (Department of Animal Molecular Biology, National Research Institute of Animal Production)

Abstract format: Oral

Western Baltic tribal cemeteries were bustling foci for ritual and socioeconomic activity during the period of Roman Influence (2nd–5th centuries CE). Recognized primarily for the deposits of sacrificed horses amongst human cremation burials, the evidence suggests that rituals were far more complex. Cemeteries were not simply used for the disposal of the dead, but also for social competition and sites of general cult activity. However, environmental and geoarchaeological excavation approaches have been underutilised at these sites, with resources dedicated to typologising artifact and burial styles. Traditional approaches have failed to address long-standing questions concerning sacrificial choices, the role of plants and other animal species in funerary rites, the tempo of clustered deposition, and the temporal relationship between ritual features. In response, the National Geographic Society-funded Path to the Otherworld project centred environmental and geoarchaeological approaches during excavation at the Bogaczevo period cemetery of Paprotki Kolonia, Warmian-Masurian Voivodeship, Poland. Our international project team deployed a full suite of cutting-edge biomolecular, geoarchaeological, and paleobotanical analyses, to comprehensively reconstruct the range of ritual choices, actions, and the chronological and spatial relationship between the human graves and the plant and animal offerings. The reconstruction of the role of horses will be additionally supported by the aDNA analyses. This paper will present the results of this year-long collaboration, highlighting the complex role that plants and animals played in spiritual life amongst late prehistoric Baltic tribes.

4 RECTANGULAR STRUCTURES IN THE LOW COUNTRIES: AN IRON AGE PLACE FOR INTERACTION WITH THE SPIRITS OF THE DEAD

Abstract author(s): de Leeuwe, Roosje (Leiden University; RAAP Archaeology)

Abstract format: Oral

Specific types of larger structures are regularly encountered in excavations of Iron Age sites in Belgium and the Netherlands. These structures typically consist of a rectangular ditch and are often associated with cremation burials. However, the rectangular structures cannot simply be interpreted as cemetery demarcations, as most of the graves

are found outside of the enclosures. This is why they are often referred to as ‘open air cult places’ and compared to Iron Age sanctuaries found in the north of France. The evidence these structures deliver does not testify to long usage, modifications, disarticulated human remains, animal bones or Iron Age weaponry that is to be expected of a sanctuary. Rather, short term utilisation, pottery depositions and a vaguely defined relation to cremation graves typify the rectangular structures. Conceivably, the structures and accompanying depositions cannot be perceived as the result of actions to invoke gods or deities, but rather, the finds and features seem more fitting as a part of ancestral worship. Although, what does that actually entail? How did Iron Age people actually conceptualise or practice interaction with ancestral spirits? The structures fulfilled a special sociocultural position in Iron Age society, emphasised by the deliberately chosen liminal location in the increasingly structured Iron Age landscape.

5 INTERACTING WITH THE DEAD: BODIES, CONSTRUCTIONS AND PRACTICES IN THE KING’S MOUND

Abstract author(s): Nitenberg, Annelie (Västsvensk arkeologi)

Abstract format: Oral

In the 7th century AD, two men were cremated on the shore of Lake Vänern in Västergötland, Sweden. Their bodies were arranged together on a huge pyre. Forty-six animals were led to slaughter and stacked around the human remains in a special way. The sacrifice consisted of four horses, 20 dogs, two cattle, three pigs, three sheep/goats, two hens, two geese, one duck, one hazel grouse, four Northern goshawks, one peregrine, one Eurasian eagle-owl, one common roach and one perch. A claw and teeth of a young bear indicate that a fur and perhaps also a bear tooth amulet were included on the pyre as well as a lot of other objects.

When the cremation fire had died down, only ashes, white bones and fragments remained. A finger ring of pure gold was then broken into pieces and spread on the remains of the men. People rolled up large boulders to seal the grave and a massive cairn was heaped up. Finally, soil, sand and turf were brought to the scene and a built mound encapsulated it all.

But this is not the end of the story. Constructions of stone and wood in the mound suggests platforms and channels for communication between the living and the dead. The dead were still important to interact with, and the mound itself, with its content, had the ability to work socially. This paper will focus on the arrangement of bodies in relation to construction elements that can be interpreted as contact areas between living and dead.

The mound is by tradition called the King’s mound and is in third place among excavated graves in Sweden when it comes to the amount of bones. The archaeological experience tell us that the buried men were part of the elite of the Late Iron Age society.

6 BOGS, BONES AND BODIES: THE DEPOSITION OF HUMAN REMAINS IN NORTHERN EUROPEAN MIRES (9000 BC-AD 1900)

Abstract author(s): Beek, Roy (Wageningen University & Research) - Bergerbrant, Sophie (Linnaeus University, Kalmar/Vaxjo) - Huisman, Floor (University College Dublin)

Abstract format: Oral

Earlier this year the first large-scale overview of well-dated human remains from northern European mires was published, based on a database of 266 sites and more than 1000 bog mummies, bog skeletons and disarticulated/partial skeletal remains. This new study made clear that these different find categories need to be studied integrally in order to arrive at a more ‘complete’ and nuanced understanding of ‘the bog body phenomenon’. The results point to fluctuating depositions of human remains between the Early Neolithic and early modern times, significant and shifting spatial clustering, and variation in site characteristics (e.g. preservation, use frequency, cause of death). Additionally, they emphasise previously unrecognised activity phases and highlight issues with categorising motives, especially around ritual violence. In this paper we elaborate on and reflect upon the main conclusions of the article. Special attention is given to differences in preservation across northern Europe and the striking diversity in site types. Finally, we discuss promising pathways for future bog body research.

7 NORTHERN BRONZE AGE TRANSFORMATIONS IN BODY TREATMENTS

Abstract author(s): Schaefer-Di Maida, Stefanie (CAU, Institut für Ur- und Frühgeschichte; CRC 1266)

Abstract format: Oral

With the change from inhumation to cremation around 1300 BCE in Europe, a striking new way of dealing with the dead becomes apparent. Even though there are many speculations about the reasons for this change, we can reconstruct the burial transformation in great detail with regard to the findings and the temporal component. For northern Germany, this transformation process could be identified with the help of the latest Radiocarbon dating and osteoarchaeological analyses, so that there are also new indications for how and in which ways the cremation custom

spread. At the site of Mang de Barga (district Segeberg, northern Germany), for example, it was possible to precisely reconstruct burial rites and how the body treatment developed especially between the Middle Bronze Age and the pre-Roman Iron Age with regard to transformation in the grave construction (including grave mounds, urns as well as stone structures) and the behaviour of depositing cremated remains. In conjunction with other contemporaneous transformations (e.g., new settlement patterns, new symbols, changes in grave furnishing as well as changes in grave occurrences) we can find indications that the new treatment of the dead also points to a social change in society. In addition to that, fragmentations and representativeness of bodies, as well as different cremation techniques show not only the control of body material, but also means of exchange and the transformation of bodies. Finally, this paper will discuss the various interpretations of the treatments of the dead against the background of the latest dating and osteoarchaeological analyses, as well as different social aspects.

8 LET THEM LIE: AN OSTEOBIOGRAPHICAL EXPLORATION OF EARLY NEOLITHIC ARTICULATED BODIES FROM CAUSEWAYED ENCLOSURES IN SOUTHERN BRITAIN

Abstract author(s): Becker, Katharina (University of Exeter)

Abstract format: Oral

Neolithic people in Britain engaged in a wide range of funerary practices, sometimes exhuming bodies before disarticulating and fragmenting the bones and then interring them in chambered tombs or long barrows, while other individuals were cremated or deposited in rivers or caves. These practices indicate that the Neolithic had an intimate relationship with the dead and frequently interacted with human remains. However, some individuals were also buried at specific locations as fleshed bodies. With such a clear interest in laying clean bones to rest rather than whole bodies, why were these individuals treated differently?

This PhD project uses a holistic, osteobiographical approach to explore the individual characteristics of the people who were buried at causewayed enclosures across southern Britain; both articulated bodies and disturbed/disarticulated remains. This paper will present some of the research conducted so far into the nature of these articulated burials in the form of osteobiographical profiles for several individuals from Neolithic causewayed enclosures. A pattern is emerging which may suggest the significance of pathological conditions which affected either an individual's appearance or their perception of the world, raising the possibility that these individuals were singled out to be buried as whole bodies and at causewayed enclosures for this reason. The presentation will focus on the osteological features of the bones themselves and the taphonomic evidence of the grave contexts, highlighting the effectiveness of both osteobiographical and taphonomic approaches. It will conclude by tying this evidence to key research questions - why bury people as whole bodies? What is the difference between these individuals and those deposited in barrows? Where do disarticulated remains fit into the Neolithic funerary landscape? It will conclude with a brief outline of the next stages of this research project.

9 PUNISHMENT IN THE IRON AGE? A CASE STUDY FROM NORTHWEST IRELAND

Abstract author(s): Tobin, Maeve - McIlreavy, David (IAC Archaeology) - Montgomery, Janet - Moore, Joanna (Durham University)

Abstract format: Oral

The Irish Iron Age is a relatively enigmatic period, a time of profound societal and environmental change, and while our understanding has been greatly expanded over the last few decades the nuances of life at the time remain ambiguous. Recent excavations at Carroweighter, Co. Roscommon in Ireland revealed intriguing and rare evidence for contrasting burial practices dating to the latter centuries of the first millennium BC. The archaeological remains represent a single cremation burial of a seemingly important local individual placed in the centre of a large enclosure, and the mutilated unburnt body of a non-local male dumped in the open ditch of the same site. While not precisely contemporary, the timing of the latter burial appears to have occurred within living memory of the cremation, suggesting that this monument retained significance for the community and was deliberately selected for this event. Analysis of multi-isotope data suggests that the man in the ditch arrived in this locale during his older childhood, having spent his formative years in a much colder climate than western Ireland. His consequence was such that at the time of his death he was afforded the privilege of burial at an ancestral burial monument, however the mode of his ignominious deposition indicates a dramatic reduction in social status, and perhaps reflects enactment of a punitive code for an unknown transgression. This paper presents the results of multidisciplinary analyses (including osteological, isotopic, artefactual, environmental and radiocarbon dating evidence) undertaken to investigate the identity of the two individuals buried at Carroweighter and poses some tentative interpretation of their respective treatment in death.

10

IS IT SYMBOLIC? A POSSIBLE FOUR-YEAR-OLD TROPHY HEAD FROM THE IRON AGE (EL PALOMAR, OLIETE, SPAIN)

Abstract author(s): López Onaindia, Diego (Univ. Bordeaux, CNRS, Ministère de la Culture, PACEA, UMR 5199, F-33600) - Lucas Aragay, Marta (Departament d'Història i Arqueologia, Universitat de Barcelona - UB) - Sala, Nohemi - Pantoja-Pérez, Ana (Centro Nacional de Investigación Sobre la Evolución Humana - CENIEH) - de Belvalet, Harmony (Univ. Bordeaux, CNRS, Ministère de la Culture, PACEA, UMR 5199, F-33600) - Escriche Jaime, Carmen - Vicente Redón, Jaime (Museo de Teruel) - Pruvost, Mélanie (Univ. Bordeaux, CNRS, Ministère de la Culture, PACEA, UMR 5199, F-33600) - Noguera, Jaume (Departament d'Història i Arqueologia, Universitat de Barcelona - UB)

Abstract format: Oral

Since the Chalcolithic and Bronze Age, there is evidence of the collections of heads of deceased individuals as a social tool in Western Europe, and specifically in the Iberian Peninsula. This is evident in collective burials, where the skulls are piled in concrete zones, or where they are missing. In addition, this phenomenon became notably widespread in the Iberian region and the meridional Gaulle with the practice of the “nailed heads” during the second Iron Age.

This practice is already recorded since the ancient Greco-Latin texts. According to previous studies, except for a few individuals aged 15-18 years old at the time of death, these nailed-heads would correspond to adult individuals and interpreted as individuals in military-capacity ages. Recent studies have also suggested that these heads were not only cut and nailed, but also embalmed, suggesting great care of the treatment.

The Iron-Age village of El Palomar de Oliete (Teruel, Iberian Peninsula) was excavated between 1977-1981, these works uncovered a well-structured neighborhood consisting of 11 houses and different warehouses from the III-I centuries BCE. Inside 6 of these houses, the excavations recovered the burials of 21 perinates and one fetal individual under the floor.

Here we present the case of an isolated cranium of a four-year-old individual found in “House 6”, one of the houses where perinate individuals were also buried. This cranium was buried in the main room of the house under graveled sediment. The bone preservation and taphonomic analyses suggest that the head was removed from the rest of the body while soft tissue was still preserved. In addition, micro-CT imaging has allowed us to diagnose one potential blunt trauma on the base of the cranium. Finally, we have conducted radiocarbon dates and genomic analyses to determine the chronology and sex of this unusual but probably symbolic burial.

11

RITUAL VIOLENCE OR VIOLENT RITUAL? DISENTANGLING DEATH NARRATIVES IN THE ORCADIAN NEOLITHIC

Abstract author(s): Crozier, Rebecca - Dittmar, Jenna (Dept of Archaeology, University of Aberdeen) - Oxenham, Marc (School of Archaeology and Anthropology, Australian National University)

Abstract format: Oral

The skeletal remains constrained within the megalithic architecture on the archipelago of Orkney, Scotland, have long provided a significant challenge for definitive interpretation. Lacking in bodily integrity and often-times characterised by significant fragmentation, the challenging nature of the assemblages has generated sophisticated yet diverse reconstructions of the significance of death in these early communities. Interpretations oscillate from the more natural ravages of time and nature, to considerations of ever more complex and sophisticated cosmologies of ancestors, personhood, embodiment and enchainment. The inherent equifinality of these competing narratives demands new evidence. The context of deposition within these megalithic structures renders the small number of tangible individuals as ostensibly distinct, special, somehow outstanding compared to all those who have, ‘disappeared’. What else, beyond their locality, might give voice to the significance of these remains for those communities who originally engaged with them? This paper presents new evidence following a reassessment of the human remains from the chambered cairn of the Knowe of Rowiegar, Rousay, Orkney. Excavated in 1937, the skeletal assemblage, minimally representing 28 individuals, is dominated by fragmentary cranial remains. Although previous work has noted three perimortem cranial injuries, a recent reassessment has identified significantly more. The patterning of trauma across this assemblage is contextualised with previous work by RC, where similar injuries have been noted in Cuween chambered cairn, Mainland Orkney, and by others at Isbister, South Ronaldsay, Orkney. Multiple injuries to some individuals suggest a hitherto unrecognised intensity of violent interaction with the body. Faced with the ever-present issue of equifinality we ask, are these remains indicative of a ritualised mortuary practice, requiring a violent interaction with the deceased, or is this the end-stage of a violently dark death?

DIVERSITY IN THE SPREAD OF NEOLITHIC LIFEWAYS: EXPLORING REGIONAL DIFFERENCES ACROSS EURASIA [PAM]

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Connolly, Rory - Kačar, Sonja - Power, Robert (School of Archaeology, University College Dublin) - Pichon, Fiona (IMF-CSIC, Barcelona) - Salazar-García, Domingo (Departament de Prehistòria, Arqueologia i Història Antiga, Universitat de València; Department of Geological Sciences, University of Cape Town)

Session format: Regular session

Across Eurasia, the adoption of farming is associated with major socio-economic, technological, cultural, symbolic and biological transformations. This process is understood as the largely rapid spread of a sedentary economy based on agriculture, herding, and new technologies like pottery and polished stone tools, which originally dispersed from southwest Asia through demic diffusion and local interactions. However, regional differences are evident and there is considerable variability in the tempo of these processes. In some areas, the characteristic hallmarks of the Neolithic are absent or uncorrelated with the appearance of farming communities. In addition, subsistence strategies based on hunting, fishing, and gathering, typically associated with Mesolithic communities, persisted in some locations despite the confirmed presence of domesticates, pointing to encounters between hunter-gatherers and farming communities living in close proximity to one another. This undoubtedly contributed to some of the diversity visible in the archaeological record, however, there is still uncertainty about how and why regional differences arose. For instance, how did different Neolithisation routes affect the timing and spread? Or what role did local environmental factors play? Recent advances in techniques such as aDNA and a combination of isotopic analyses have provided valuable information on the spread and consolidation of Neolithic populations (ancestry) as well as economy (diet), and helped to discern the timing of overlap. Similarly, innovative and nuanced archaeological approaches to material culture have given rise to a number of wide-ranging studies which highlight and address the extent of diversity in the spread of Neolithic lifeways.

In this session, we welcome submissions from different regions across Eurasia with the aim of illustrating how the Neolithic, due to the cultural and environmental diversity in which it developed, manifests in different ways. The session will provide an opportunity to examine and discuss what factors lay behind these regional differences.

ABSTRACTS

1 THE NEOLITHISATION OF SOUTH-EASTERN EUROPE: UNDERSTANDING SOCIAL INTERACTIONS AND CULTURAL RELATIONS BETWEEN STARČEVO AND IMPRESSED WARE THROUGH LITHIC PRODUCTION SYSTEMS

Abstract author(s): Kacar, Sonja (University College Dublin)

Abstract format: Oral

Neolithic cultures in Europe are generally defined on the basis of different ceramic styles, with early farming groups distinguished by differences in pottery production.

In the case of Southeast Europe, two main Neolithic groups have been identified based on two different ceramic styles: the Impressed Ware culture of the coastal areas (Adriatic) and the Starčevo–Körös–Criş complex of the continental Balkans.

Because of these differences in ceramic style and other aspects of material culture - such as the presence/absence of anthropomorphic figurines - archaeologists have tended to study these groups separately, as representative of two distinct paths of Neolithisation (maritime vs continental).

To re-examine the development of the Neolithic in South-Eastern Europe and the relations between these apparently distinct groups, this presentation considers lithic data obtained from coastal and inland sites of Croatia and Montenegro, associated with both Impressed Ware and Starčevo cultures.

Are there significant differences in lithic production traditions (e.g. use of different methods and techniques, different types of tools) and if so, do they coincide with traditional distinctions between these two archaeological cultures?

Do differences in lithic (and ceramic) production signal different processes of Neolithisation, with varying influences of migrant farmers from different regions of the Near East and local hunter-gatherers?

Finally, are there similarities between Starčevo and Impressed Ware production, which could point to the existence of contacts between these two cultural groups? To answer these questions requires re-focusing attention on the logistics of material culture production at the borderlands (cultural peripheries) where interaction is most likely to have occurred.

2 CHANGES IN MANDIBULAR MORPHOLOGY IN THE MESOLITHIC - NEOLITHIC TRANSITION IN WESTERN IBERIA: EVIDENCE AND POSSIBLE CAUSES

Abstract author(s): Godinho, Ricardo Miguel (ICArEHB, University of Algarve) - Umbelino, Cláudia (CIAS, University of Coimbra; ICArEHB, University of Algarve) - Valera, António (ICArEHB, University of Algarve; Era Arqueologia) - Carvalho, António (CEAACP, University of Algarve) - Gonçalves, Célia (ICArEHB, University of Algarve) - Smith, Patricia (Faculties of Medicine and Dental Medicine and NNHC, Hebrew University)

Abstract format: Oral

Farming and animal husbandry originated in the Near East and were introduced into Iberia by migrating populations no later than 5500 BCE. This introduction caused profound changes in the economy, settlement patterns, ideology, diet, and biology (including gene pool, health, and morphology) of the Iberian populations. To date, little research has been devoted to the impact of this transition on mandibular morphology, which is regrettable since it is impacted by population history and diet.

We examined the impact of this transition by comparing Mesolithic, Neolithic, and Chalcolithic mandibles from western Iberia. We also included a late 5th to mid-4th millennium BCE Chalcolithic sample from the Southern Levant to examine the relationship between the Iberian samples and a Near Eastern population that had a well-developed agro-pastoralist subsistence base. To this end, we digitized the specimens and examined morphology using Geometric Morphometric methods. Dental wear was scored using the scale developed by Smith (1984). Based on previous aDNA studies and the relationship between mandibular form and population history, we expected significant differences between the Iberian Mesolithic and the Southern Levant samples and that the post-Mesolithic Iberian samples would be intermediate between these two.

As predicted, the Iberian post-Mesolithic Iberian specimens are morphologically intermediate between the significantly different Mesolithic Iberian and Chalcolithic Southern Levant mandibles. Dental wear is generally comparable between Mesolithic Iberia and the Chalcolithic Levant, and most different when compared to post-Mesolithic Iberians. Altogether, our results are consistent with greater impact of population history on morphology rather than masticatory mechanics.

3 INVESTIGATING DAIRY PRODUCTS FROM THE NEOLITHIC TO THE BRONZE AGE IN MEDITERRANEAN IBERIA: A LIPID RESIDUE ANALYSIS AND PROTEOMIC APPROACH

Abstract author(s): Salazar García, Domingo Carlos (Departament de Prehistòria, Arqueologia i Història Antiga, Universitat de València; Department of Geological Sciences, University of Cape Town) - Spiteri, Cynthianne (Dipartimento di Scienze della Vita e Biologia dei Sistemi, University of Torino; Institute for Prehistory, Early History and Medieval Archaeology, Eberhard Karls University Tübingen) - De la Cruz Córdoba, Manuela (Departament de Prehistòria, Arqueologia i Història Antiga, Universitat de València) - Teoh, Fallen Kai Yik (Dipartimento di Scienze della Vita e Biologia dei Sistemi, University of Torino) - García Borja, Pablo (Universidad Nacional de Educación a Distancia. Centro asociado Alzira-València) - Demarchi, Beatrice (Dipartimento di Scienze della Vita e Biologia dei Sistemi, University of Torino)

Abstract format: Oral

The consumption of dairy products during prehistoric times is relevant to better understand dietary habits, culinary traditions and economic activities from past populations. Their role during Recent Prehistory is, in this context, of special interest to shed new light on food resource adaptation during the Neolithization process and the development of more complex societies during the Chalcolithic and Bronze Age. Biomolecular methods developed during the last decades allow us to directly assess the presence of dairy lipids in archaeological material culture, such as pottery, and of specific milk proteins like β -lactoglobulin (BLG) in human dental calculus. Combining both organic lipid residue analysis and palaeoproteomic analysis is the way to link dairy consumption to individual osteobiographies, as well as a tool to help detect changes in dairy processing and consumption patterns that might have resulted in higher human exposure to milk whey and thus lactose. While this type of analysis, especially organic lipid residue analysis, has been carried out profusely along several regions of Eurasia, the Western Mediterranean region is still relatively underexplored. We present here preliminary results of organic residue analysis on pottery and palaeoproteomics on human dental calculus from Neolithic to Bronze Age sites of Eastern Iberia.

4 TANGLED WAY OF NEOLITHIZATION AT THE INNER PERIPHERY: A CASE STUDY OF SOUTH BOHEMIA (CZ)

Abstract author(s): Vondrovský, Václav (Institute of Archaeology of the Czech Academy of Sciences) - Ptáková, Michaela (University of South Bohemia) - Šída, Petr (Institute of Archaeology of the CAS) - Prach, Jindřich (Centre for Theoretical Study, Charles University and the CAS) - Pták, Martin - Bumerl, Jiří (University of South Bohemia) - Pokorný, Petr (Centre for Theoretical Study, Charles University and the CAS)

Abstract format: Oral

After 5400 BC the expansion of Linear Pottery culture (LBK) disseminated the sedentary way of life rapidly across fertile lowlands of Central Europe. However, most of the upland regions were omitted by the early colonisation being settled much later if ever. In our paper, we will follow the neolithization process in South Bohemia (Czech Republic) which constituted a relatively isolated and spatially limited enclave within the LBK milieu. Our multidisciplinary project, therefore, examined potential differences and adaptations in subsistence and settlement strategies employed by local farmers. According to radiocarbon chronology, the region was settled by farming communities about 100 years later than all surrounding areas and even after that, hunter-gatherers still thrived around local lakes. Substantial evidence for contacts is missing in the archaeological record, but they must have been inevitable considering the spatial proximity of sites inhabited by these two groups. Yet at agrarian settlements, inhabitants followed the conservative LBK repertoire of material culture. Substantial alternations were revealed by archaeobotanical analysis for the spectrum of cultivated crops. It is interpreted as an effort to accommodate farming practices for less favourable environmental conditions of South Bohemia. Despite attempts for adaptation, a steep decrease in occupation density is recorded after 5000 BC suggesting a collapse after which the occupation was not restored to a similar extent for 2000 years. The case of South Bohemia illustrates how unstraightforward the process of neolithization could have been when a biased research focus on fertile lowlands with an abundant archaeological record is abandoned.

5 INVESTIGATING THE VARIABILITY OF FRESHWATER RESOURCE USE BY EARLY FARMERS IN CENTRAL EUROPE

Abstract author(s): Davis, Izzy - Roffet-Salque, Mélanie (Organic Geochemistry Unit, University of Bristol)

Abstract format: Oral

The Linear Pottery Culture (LBK) spread rapidly across central Europe and is associated with the first livestock-keeping and pottery use in the region. Zooarchaeological assemblages indicate a reliance on domestic animals, although recent research has shown regional variation across the LBK distribution in terms of meat and dairy exploitation. Hunting and fishing seem to play a lesser role, with freshwater fish remains rarely recovered from LBK sites, despite their close proximity to rivers and lakes. Due to poor preservation and unsuitable recovery methods, zooarchaeological remains may not provide an accurate insight into the exploitation of freshwater resources by these early farming populations.

The processing of freshwater resources in pottery vessels can be identified through the analysis of lipid residues. The detection of lipid biomarkers deriving from fish and other aquatic products provides direct evidence for the processing of aquatic resources, and biomarkers can be detected at low concentrations to reveal low levels of freshwater resource use.

Organic residue analysis is used to investigate freshwater resource use within the LBK, providing new insights into the relationship between early farming populations and freshwater environments in central Europe. The results indicate variability within the LBK in terms of the importance of freshwater resources, relating to environmental setting and potential socio-cultural factors. The findings are compared to other regions of Neolithic Europe, where the beginning of agriculture saw a shift to a terrestrial economy or the continued exploitation of aquatic resources alongside domestic animal products, highlighting the diversity of Neolithic.

6 NEOLITHIC MARINE RESOURCE EXPLOITATION IN ATLANTIC EUROPE: RECENT EVIDENCE FROM CO. SLIGO, NW IRELAND

Abstract author(s): Connolly, Rory (University College Dublin)

Abstract format: Oral

The role and significance of marine resource use has been the subject of much scholarly discussion in the field of European Neolithic studies. Despite this, the precise nature, magnitude, and geographic extent of post-agricultural prehistoric marine exploitation in Europe remain unclear. The continued accumulation of substantial shell middens in regions such as County Sligo in the northwest of Ireland subsequent to the introduction of agriculture highlights the noteworthy social and economic interest in littoral resources among coastal farming communities.

These shell middens, which are comprised predominantly of oyster remains and can be up to 3 metres thick in places, are exposed along the coast in eroding sections for hundreds of metres. Recent isotopic evidence indicates that Neolithic communities in Ireland subsisted on a predominantly terrestrial diet, raising interesting questions about the deposition of these middens. Specifically, it remains unclear whether the exploitation of the marine environment at this time represents a sporadic, local response to climate change, intermittent crop failure, or a long-term strategy to mitigate environmental constraints in remote Atlantic coastal settings.

Here we present preliminary results from the NeoMarE project (Neolithic Marine Resource Exploitation in Atlantic Europe), which seeks to address these issues through a targeted programme of radiocarbon dating, archaeological soil micromorphology, and lipid biomarker analysis for palaeoenvironmental reconstruction. This is coupled with a bottom-up citizen science initiative to help identify and target midden sites that are imminently threatened by coastal erosion.

The results of this project are considered alongside recent studies from other regions of Europe and offer fresh evidence for critically re-evaluating competing hypotheses about Neolithic coastal resource exploitation in Atlantic coastal environments.

7 DENTAL CALCULUS PERSPECTIVES TO NEOLITHIC IRISH DIET

Abstract author(s): Power, Robert (School of Archaeology, University College Dublin) - Mackie, Meaghan (School of Archaeology, University College Dublin; Dipartimento di Scienze della Vita e Biologia dei Sistemi) - McClatchie, Meriel (School of Archaeology, University College Dublin) - Spiteri, Cynthianne (Dipartimento di Scienze della Vita e Biologia dei Sistemi; Institute for Prehistory, Early History and Medieval Archaeology, Eberhard Karls University Tübingen) - Demarchi, Beatrice (Dipartimento di Scienze della Vita e Biologia dei Sistemi)

Abstract format: Oral

Archaeological research on Irish Neolithic sites (4000–2500 cal BC) have provided a sizeable corpus of information on the nature of diet during the Irish Neolithic. Research has identified a package of crops and livestock, that arrived in Ireland within a demic diffusion framework. Carpology studies, from infrastructure-funded excavations, nearly always of carbonised seeds, have shown widespread evidence of cereal husbandry. Assemblages show a dominance of emmer and lesser amounts of other wheats, hulled and naked barley, flax and hazelnuts, indicating low numbers of species relative to many parts of Europe. Zooarchaeological, stable isotopic and molecular evidence has demonstrated the raising of cattle, with significant amounts of pig and caprines. In contrast, there is little evidence of fish, birds and wild mammals. Patchy evidence hinders attempts to understand how farming and herding spread and adapted to Ireland. For example, archaeobotanical and zooarchaeological assemblages sizes are commonly small and may not be representative. While some have suggested that the seeming paucity of assemblages in the Late Neolithic reflects a trend towards pastoralism, it may also indicate preservation biases.

To complement this dietary record, there has been increasing attention on alternative approaches, including the analysis of dietary remains from dental calculus, mineralised dental plaque. When well preserved, this material can entomb a complex variety of dietary remains such as phytoliths, starches, lipids and proteins as an individualised record of diet, so far not applied in Irish prehistory. In this paper, we report initial microscopy findings of dental calculus from human individuals, inhumed in a variety of Middle, Later Neolithic and Early Bronze Age funerary traditions including Linkardstown, passage and wedge tombs, and cists.

535 PRECARIOUS LIVING CONDITIONS IN THE PAST: A MULTIDISCIPLINARY AND TRANSCRONOLOGICAL APPROACH

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Gijón, Ramón (Departamento de Medicina Legal, Toxicología y Antropología Física, Universidad de Granada) - Tejerizo, Carlos (Dipartimento di Antichità, Filosofia, Storia e Geografia, Università degli Studi di Genova) - Díaz-Zorita Bonilla, Marta (Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters, University of Tübingen) - Camarós, Edgard (Department of Archaeology, University of Cambridge)

Session format: Regular session

In our present, precarious living conditions are worldwide spread and increasing due to socioeconomic differences related to differential access to essential resources, security and basic needs. Causes may be linked to political and economic policies (intrinsic), climate catastrophes (extrinsic) or both (e.g., climate change) and can be long or short lasting, and individual or collective. Therefore, precarious living conditions are a major issue affecting people in the present as it affected people in the past. Untangling such ways of living from an archaeological perspective is essential to reconstruct living dynamics that affected human health, architecture or social organization among others from daily life conditions to historical perspectives in a given moment (e.g., crisis, conflicts or pandemics) or period (e.g., absence of hygiene, housing, slavery or poverty among others). Such individual or collective precarious conditions can

be recovered archaeologically and our discipline is directing its interest towards them to reconstruct past lives and define socioeconomic dynamics of ancient societies.

In the present session we will discuss how we evidence precarious living conditions in the past using a wide range of perspectives and materiality (e.g., human and animal bones and other organic materials, pottery, lithic, structures and the landscape among many others) and what they tell us about ancient societies. We seek for general studies, case-studies and methodological advances from different periods and geographical locations with the aim of discussing precarious living conditions in the past. Furthermore, the session aims to define and discuss what precarious living conditions are in the past beyond the modern definition and in light of their historical contexts.

ABSTRACTS

1 WAS HUNTING SAVING THE DAY DURING THE TIMES OF UNCERTAINTY AND SHORTAGE AT THE LENGYEL SITE OF SVODÍN (SLOVAKIA)?

Abstract author(s): Hukelova, Zuzana - Krošláková, Mária - Oravkinová, Dominika - Nezvalová, Lucia - Olšav, Štefan (Institute of Archaeology of the Slovak Academy of Sciences)

Abstract format: Oral

Based on the archaeological record, the remains of domesticated species prevail over those of wild animals in the central-European Neolithic (app. 5700/5500 - 4300 BC). At the end of the period, however, the proportions of wild and domesticated animal remains seem to vary by site, with apparent increase of the bones of wild animals. It has been suggested that these differences may have been connected with local environmental changes and repeated periods of crop failure. The increased proportion of the bones of wild animals during the presumed periods of drought may in fact point to climate deterioration in the area. Animal proteins may have been consumed to compensate for the shortage of plant proteins. Compared to the Early Neolithic, the level of violence seems to have increased in the late phase of the period as well, suggesting also social change. The results of osteological evaluation of Late-Neolithic population from Svodín, Slovakia, seem to be consistent with the theory of environmental/social changes and nutritional shortage also indicated by non-osteological data. The population manifests signs of poor health status – from low stature, high proportion of non-specific stress indicators, such as dental enamel hypoplasia and inflammatory changes, to metabolic disorders. In addition, skeletal markers as well as archaeological context (grave inventories including boar tusks and a variety of weapons) indicate demanding lifestyle and distinct position of mature males, implying the importance of hunting and those who were able to help overcoming the period of hardship.

2 SOCIAL ORGANISATION AND HUMAN RESILIENCE AT THE BINIADRÍS CAVE DURING THE LATE BRONZE AND IRON AGES (MENORCA, SPAIN)

Abstract author(s): Timm, Monice (SFB1070 Ressourcenkulturen, Eberhard Karls Universität Tübingen) - Díaz-Zorita Bonilla, Marta (Institut für Ur- und Urgeschichte und Archäologie des Mittelalters, Eberhard Karls Universität Tübingen; SFB1070 Ressourcenkulturen, Eberhard Karls Universität Tübingen) - Alarcón García, Eva - Moreno Onorato, Auxilio (Department of Prehistory and Archaeology, University of Granada) - Marciales Daza, Mauricio (SFB1070 Ressourcenkulturen, Eberhard Karls Universität Tübingen) - Baten, Jörg (Economic History Department, Eberhard Karls Universität Tübingen; SFB1070 Ressourcenkulturen, Eberhard Karls Universität Tübingen)

Abstract format: Oral

The island of Menorca is one of the last inhabited islands within the Mediterranean Sea. Despite the difficult living conditions, due to the rather rocky topography and the few areas that can be used as habitats, the prehistory of this island stands out for its vast amount of monumental architecture and prehistoric sites. The social-economic structure fits well into the cultural setting of the Western Mediterranean, but there are still many missing links in the Menorcan past regarding their social organisation and funerary behaviour. In order to gain detailed insights into population adaptation to the living conditions, research has been conducted in the Biniadrís cave (Menorca, Spain) since 2015. These preliminary results will consider the social organisations and human resilience of the population who inhabited Biniadrís during the Late Bronze and Iron Ages. Therefore, bioarchaeological methods, including the focus of musculoskeletal markers and skeletal pathologies, with the use of geometric morphometrics were applied aiming to investigate in detail the health status. In this study, the differences between the sexes in their social structure as well as the differences between the age groups (mainly subadult and adult individuals) will be examined. The cave allows such an in-depth study due to its remarkably bone preservation, but it is limited through its commingled context. Therefore, it will be meaningful to contrast non-adult and adult individuals as they are buried together in the same cave. Having an overview of the differences will help to comprehend which status children had in this society, considering the particular living conditions of this vulnerable age group.

3 REVISITING THE RURAL LANDSCAPE: THE PUTICULI, A FORGOTTEN PHENOMENON FOR THE FORGOTTEN ONES

Abstract author(s): Carrasco López, José (Universitat Autònoma de Barcelona)

Abstract format: Oral

In late Roman times, extensive burial areas developed around the rural settlements of Ager Tarraconensis. Frequently these areas allocated space with the *pars rusticae* of many of them. Currently, it has been possible to document a phenomenon with few parallels in the archaeological record.

This phenomenon, recurring in the Northeast of the peninsula, is characterized by collective inhumations of individuals dumped without any type of burial or funeral ritual in abandoned grain silos. These wells used as landfills, became the ideal place to dump broken objects and elements, including burials.

Our presentation aims to describe this phenomenon and introduce a recent case study based on excavations around the provincial capital. We believe that these structures, having discarded their storage function, are used as a place to deposit garbage: a concept that the sources consider as a *puticuli*.

Traditionally, the *puticuli* have been explained as large wells located outside the cities. It served as garbage dumps and places where some sectors of the population were discarded after their death. Do these garbage dumps have a hitherto unidentified rural parallel?

4 OSTE BIOGRAPHICAL MARKERS OF PRECARIETY AND INEQUALITY FROM ANTIQUITY TO THE MIDDLE AGES IN CANTABRIAN SPAIN: PALEOPATHOLOGICAL LANDSCAPES OF SOCIOECONOMIC CHANGE

Abstract author(s): Camarós, Edgard (Universidad de Santiago de Compostela; University of Cambridge) - Carniceiro, Sílvia (Universidad de Cantabria)

Abstract format: Oral

Precarious living conditions and inequality can be read on the human skeleton through stress-markers and pathologies reflected on bones. However, the presence of such osteological signatures are not enough to claim precarious and unequal social conditions during lifetime. To do so, comparisons are required among contemporaneous population and across time to provide a comparative framework that reflects such living conditions. In this presentation, we discuss the case of the transition from the Late Antiquity to the Middle Ages in Cantabrian Spain where we have identified osteobiographical evidence of precarity and social inequality. Different skeletal assemblages are presented from the 7th to the 12th century AD and the osteological markers identified contextualised in a historical period of socio-economic change. Our results show that this is a period with high infant mortality, ample record of osteological stress-markers and sufficient pathological conditions to reconstruct a landscape of precarity and inequality among certain sectors of the Cantabrian population, specially from rural setting, in the chronological transition from Late Antiquity to the Middle Ages.

5 CONTRIBUTION OF IDENTIFIED SKELETAL COLLECTIONS FOR ASSESSING SOCIAL ASYMMETRIES IN THE PAST: THE CASE OF THREE PORTUGUESE SAMPLES (19TH-21ST CENTURIES)

Abstract author(s): de Carvalho, Líliana (University of Coimbra, Research Centre for Anthropology and Health, Department of Life Sciences) - Wasterlain, Sofia (University of Coimbra, Research Centre for Anthropology and Health, Department of Life Sciences; Centre for Functional Ecology, Department of Life Sciences, University of Coimbra)

Abstract format: Oral

Paleodemography is helpful in studying levels of health/disease of past populations and their relationship with socio-economic conditions.

Although not of archaeological origin, identified skeletal collections constitute an important mean of obtaining knowledge on past populations, mainly due to the knowledge about the context in which they were formed and who integrates them (usually - but not always - individuals with lower social support, such as the poor, sick, and “lunatics” or outsiders).

To assess the impact that childhood stress may have had on past societies with marked socioeconomic differences, children’s stress indicators will be studied in 360 adults from three identified Portuguese osteological collections (Identified Skeletal Collection of the University of Coimbra, Identified Skeletal Collection of the National Museum of Natural Science - Lisbon, Collection of Identified Skeletons of the 21st Century - University of Coimbra). All individuals were born between the mid-19th century and the late 20th century, an extended period that includes

the biosocial changes of the post-industrial revolution, the discovery of the “theory of germs,” and improvements in prophylaxis and medicine. Nevertheless, this period also constituted a milestone of social poverty and underdevelopment in Portugal that prevailed between the end of the monarchy in 1910 and the end of the dictatorship in 1974.

In general, it is expected that individuals born in the 19th century will be more likely to suffer from stress in childhood and, therefore, be significantly more affected by morbidity during adult life, dying earlier than their peers who lived a healthier childhood. Individuals born during the 20th century, although with a childhood often similar to that of the previous century, would have benefited from some medical advances that would mitigate their greater propensity for health problems in adulthood, thus increasing the average life expectancy.

6 FROM AUTONOMY TO PRECARIY: THE MATERIAL IMPACT OF INDUSTRY IN THE NORTHWESTERN IBERIAN RURAL WORLD (19TH-21ST C.)

Abstract author(s): Tejerizo, Carlos (Università degli Studi di Genova)

Abstract format: Oral

The impact of industry in prior pre-industrial economies has been a common topic of discussion in Social Sciences. In the case of Archaeology, the development of Industrial Archaeology since mid-20th century has fostered new compelling insights on the topic, delving into questions such as the material conditions of the working classes, the technological development of industry or the transformation of the patterns of distribution and consumption. However, these analyses have not commonly addressed the historical development of such impacts in pre-industrial societies from a material point of view, or the dialectics that emerges in this process. Moreover, analysis have focused mainly in the urban world, leaving aside the rural areas, considered as peripheric. In this paper, I will describe the material traces of the impact of industry in a peasant-based economy, and how this society was transformed while conserving traces of the pre-industrial past. For this purpose, I will use a case study coming from north-western Iberia, centred in the little village of Casaio (current Galicia), where we have been conducting different research projects since 2017. This village, a typical peripheral rural context located in the mountains, was totally transformed in less of one generation in the 20th century through the introduction of two main forms of industry: one related to the tungsten exploitation regarding the Second World War, and the slate mining of the second half of the 20th century. Through the archaeological analysis of different landscapes and sites I will materially characterize the pre-industrial social and economic landscape of Casaio to deeply understand the impact of tungsten and slate industry and how this historical process operated from a local point of view. Thus, I will discuss the transformation from an autonomous, although complex and contradictory, society, into an industrial and capitalistic economy based on high levels of precarity.

7 PARASITES AS PROBES OF PRECARIOUS LIVING CONDITIONS: THE SPANISH CIVIL WAR CASE

Abstract author(s): Gijón, Ramón - Méndez, Francisco - Gutiérrez, Laura - Miranda, Erik (Universidad de Granada)

Abstract format: Oral

Parasitic evidence, associated with archaeological materials, allows us to take a bioarchaeological approach to different questions, concerning the populations under study. These include different elements, such as socio-economic conditions, hygienic and sanitary conditions, the presence of domestic and peridomestic animals or population movement, among others.

Due to the precarious conditions that occur during a war, the discovery of parasites allows us to gain first-hand knowledge of the conditions that individuals had to suffer, such as overcrowding, ingestion of food in poor conditions or hygienic problems, among others.

Despite the discipline's proven interest in transdisciplinary contributions, studies carried out on past populations subjected to wartime conditions are scarce. This work wants to provide new data about the different parasites found in archaeological material, associated with war cases. In particular, this contribution reviews the existing knowledge of parasites in these conditions and provides a new study on parasites from skeletal individuals from the Spanish Civil War (1936-1939).

8 THE MATERIALITY OF PRECARIY AND MIGRATION IN CONTEMPORARY GREECE FROM AN ARCHAEOLOGICAL PERSPECTIVE

Abstract author(s): Jungfleisch, Johannes (Ruhr-University Bochum)

Abstract format: Oral

The precarity of people on the move arises from the interplay of different elements. Following Anna Tsing, precarity is a modality of life characterised by instability, indeterminacy, and vulnerability. Precisely these aspects determine the living conditions of many migrants in the present who leave their home countries for a variety of reasons. But what makes people in motion especially vulnerable is their frequently undocumented status in the transit and destination countries produced by the border regime of nation states.

Forced, undocumented and work-related migration produces material traces and complexes reflecting people's living conditions at the distinct stages of their contingent migrant journeys. These material remains document not only how people on the move physically encounter the perils and obstacles during their clandestine travels, for example, the forces of nature in the wilderness and the border security infrastructures. Migrants' material worlds also show how people on the move attempt to remake a sense of home in the foreignness of their new environments. Therefore, the archaeological investigation of the material remains of contemporary migration may reveal the precarious conditions of migrants' transient lives.

Based on two case studies conducted in Turkey and Greece in 2017 and 2022, this paper discusses, on one side, the material remains people on the move leave behind during their undocumented travel to Europe. On the other side, I focus on the material culture of their lives in Greece. In this way, I attempt to trace the material remains of migration as material witnesses to the precarity of migrants at the different stages of their journeys to Europe and during their lives in Greece. This contemporary perspective on precarity may serve as an analogy to similar conditions in the past.

538 ASSEMBLING HOARDS: OBJECT BIOGRAPHIES, PAST LIVES AND THE PROCESS OF COLLECTING AND ACCUMULATING OBJECTS INTO HOARDS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Goldberg, Martin (National Museums Scotland) - Becker, Katharina (University College Cork) - Scarci, Azzurra (Römisch-Germanisches Zentralmuseum – Mainz)

Session format: Discussion session

Hoarding – the deliberate collection of objects – is typically studied by archaeologists through deposition. This final act, on this final day, tells us very little about all the other actions that the objects were involved in or about all the other days and lives these objects encountered.

Hoards recovered through controlled excavation offer more possibilities for interpretation. Evidence for grouping or parcels are most obvious when objects are contained in vessels, but where organic evidence is preserved, more subtle groups such as bags or bundles can be recognised. These active distinctions between objects (even where there are material relationships across the whole assemblage) can provide residual information about the process of accumulation. Objects biographies can be reconstructed from wear, repair or fragmentation and increasingly potent scientific analyses allow us to investigate a range of questions about how, and why, people created these collections of objects before burial:

- What were objects used for before they were hoarded and why were they buried together?
- Who might have owned these objects and why were they valued?
- What distances, either in time or space, did objects travel before being hoarded?
- In the case of heirloom or curated objects, why were they no longer retained?
- How were processes of assembling ritualised or otherwise made meaningful?

By focusing on the actions behind hoarding, this session intends to ask how, and why, people amassed and valued curated objects in the first place. We are curious about comparisons with other complex assemblages (burial, sanctuary deposits), forensic approaches to modern discoveries, or fresh thinking on older collections. We are seeking to make thematic connections between participants in this session and the UKRI-funded 'Unwrapping the Galloway Hoard' project in order to encourage the cross-fertilization of ideas and approaches, especially between historic and prehistoric research into hoarding and deposition.

ABSTRACTS

1 A HOARD WITHIN A HOARD – TRANSFORMING OBJECT BIOGRAPHIES. AN EXAMPLE FROM THE DANISH LATE BRONZE AGE

Abstract author(s): Metzner-Nebelsick, Carola (LMU Munich)

Abstract format: Oral

The paper will introduce the Montelius Period IV hoard of Mønsted near Viborg in central Jutland, Denmark. Several deliberately fragmented golden objects; two bracelets with double-looped ends, pieces of gold wire and folded sheet gold were stuffed into the socket of a bronze axe. This type of bronze hoard with ritually fragmented metal artefacts blocking axe sockets is well attested in the Late Bronze Age, with clusters in the Carpathian Basin, Britain, Ireland and Northwest France. Single axes blocked with gold ornaments, however, represent a typical hoard type in Britain and Ireland. So far, Mønsted seems to be the only example from Denmark or southern Scandinavia. The paper will elucidate the biographies of the single items of the Mønsted hoard. They represent, so to say, a hoard within a hoard. Golden bracelets with double-looped ends are symbols of power with remarkable longevity ranging from the Early Middle

Bronze Age to the end of the late Bronze Age according to continental European chronology, thus covering ca. 900 years of continuous use. However rare items, they were worn in large areas of continental and northern Europe, signifying a shared understanding of their symbolic agency beyond cultural boundaries. The fragmentation of these special body ornaments will be a focus of discussion, since until Per. III golden bracelets of this type were almost exclusively deposited as body ornaments in male elite graves in the northern cluster of their distribution.

2 MOUNTS OF A BRONZE AGE SHIP FROM THE 14TH CENTURY BC HOARD NEAR KRYVA IN CARPATHIAN UKRAINE.

Abstract author(s): Nebelsick, Louis D. (Unwersytet Kardynala Stefana Wyszyńskiego w Warszawie)

Abstract format: Oral

A hoard of Uriu-Opály type (Brz D/14-13th century BC) was discovered in a Lăpuș style conical necked vessel on a high terrace of the Tisza River near Kryva, rajon Chust in the Ukrainian Maramures in 1966. It was composed of a typical assemblage of conical and disk butted axes and spiral jewelry but also two remarkable cast bronze mounts: An upswept socket with lentoid button shaped finial and a pointed triangular element with a zoomorphic snout have not been adequately explained. I believe that they are best seen as the bronze mounts of the prow and stern of an inceptive Late Bronze Age ostentatious ship. Comparable mounts, which are also likely to have decorated the extremities of ships, were found in the hoard Lozova II in Moldavia. In this paper further bronze mounts, remains of early ships and iconographic parallels are consulted from a vast region including Scandinavia, Western Europe, the Aegean and the Near East in order to propose a narrative explaining how these mounts that show affinities with both Aegean and Scandinavian ships ended up in a northern Carpathian hoard

3 BREAKING VOTIVE OFFERINGS IN THE PANHELLENIC SANCTUARY OF OLYMPIA

Abstract author(s): Scarci, Azzurra (Leibniz-Zentrum für Archäologie)

Abstract format: Oral

Large numbers of fragmented and intentionally destroyed bronze votive offerings from the Geometric and Archaic periods have been retrieved from the panhellenic sanctuary of Olympia in Greece. These copper-based fragments bring to mind scrap metal found in numerous Bronze Age hoards in Europe.

This study aims to present the results of an ongoing project at Leibniz-Zentrum für Archäologie in Mainz, in collaboration with the German Archaeological Institute in Athens, focusing on identifying specific fragmentation and breakage patterns in selected groups of material (tripod cauldrons, griffin heads and Sicilian-Italian artefacts) analysing them statistically according to their measurements and weights, and investigating the spatial distribution of the objects and their relationship to specific functional areas of the sanctuary (e.g. workshops, altars, temples). The use of different approaches will help to understand better the meaning of this phenomenon, how and when these votive offerings were destroyed and the reasons why they were recovered in large numbers within the sanctuary.

4 GATHERING BONES: ASTRAGALOI IN GREEK ARCHAEOLOGICAL CONTEXT

Abstract author(s): Care, Barbara (University of Fribourg, Switzerland; ERC Locus Ludi)

Abstract format: Oral

The contribution focuses on ongoing research concerning formation dynamics of astragal deposits, collected in thousands of specimens in Greek archaeological contexts. The interpretation of these finds has heavily relied on the content of documentary sources, highlighting their role as game tools, and the direction taken by modern scholarship has not moved significantly away from this traditional approach. In fact, the game practice is still believed to be so popular to justify the abundant archaeological and visual evidence come down to us from antiquity.

It is rather an obvious point, but forgotten when it comes to astragali, that contexts matter. Placing those archaeological remains within their physical, cultural, geographical and chronological setting is crucial to give them meaning. This research directs attention to the shifting roles of astragali, which are first and foremost physical remains of a once-living being, and addresses how these roles change and are renegotiated through time, space and social context. Looking also at depositional features and ritual-specific behaviours in the various contexts, especially in votive areas, the study provides a more holistic viewpoint for a deeper understanding of the reasons behind the selection and gathering of these bones.

A. MARTINČEK AND LIPTOVSKÉ SLIAČE - THE TALE OF TWO SWORD HOARDS

Abstract author(s): Havlíková, Markéta (MUNI - Ústav archeologie a muzeologie) - Bača, Martin (Department of Archaeology, Faculty of Arts, Comenius University in Bratislava) - Sliacka, Simona (Liptov museum in Ružomberok)

Abstract format: Poster

In this poster, we will focus on two Late Bronze Age sword hoards from northern Slovakia. The first one, from Martinček, was found at the beginning of the twentieth century in the field by local farmers and consisted of sixteen swords. The second one, from Liptovské Sliache, was found in the middle of the twentieth century in the travertine mound by miners and consisted of six swords. Both hoards could be considered very interesting and valuable find assemblages. Unfortunately, because of the time of discovery, not much could be said about them besides the typo-chronological perspective. Therefore in 2023, we decided to re-examine both hoards including a complete metalwork wear analysis as well as an analysis of element composition to reconstruct a possible (more complex) story behind both sword hoards. Interestingly, what seemed to be an example of a rather uniform practice of sword deposition, common in this area of Central Europe, now seems to be a more differentiated phenomenon.

539 NEW RESEARCH IN ROMAN RITUAL: OBJECTS AND TEMPLE SITES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Stemberger Flegar, Kaja (PJP d.o.o.) - Lundock, Jason (Full Sail University)

Session format: Regular session

In this session we will explore some new research into the material practice of ritual behaviour in the Roman world. As a material representation of the attempt to put order and definition to one's world, examining ritual practice offers insight into both social and cosmological structures within a given cultural context. The empire of ancient Rome, being the most multi-cultural political union in the ancient world, offers a useful view into how diverse cultural traditions negotiate with each other to develop new concepts of identity and meaning through both inclusive and exclusive ritual behavior. New discoveries in the field and fresh perspectives continue to deepen our understanding of the Roman ritual landscape. By bringing together research on small finds, depositional practice, and temple sites, this panel will examine how ritual reflected and defined the Roman experience to those who lived it. While the session's primary focus is on studying material culture, we will also incorporate theoretical perspectives to offer greater depth in our understanding and interpretation of ritual behavior in the wider Roman world.

ABSTRACTS

1 LARRAHE: A VASCONIC DEITY IN THE NORTH OF NAVARRE

Abstract author(s): Ruiz-Gonzalez, Daniel (Aranzadi Science Society) - Mendizabal-Sandonis, Oihane (EHU/UPV, Classic Studies Department; Aranzadi Science Society) - Aiestaran, Mattin (UPV/EHU, Department of Geography, Prehistory and Archeology, Investigation Group of Prehistory IT-1223-19; Aranzadi Science Society) - Narbarte, Josu (Aranzadi Science Society) - Velaza, Javier (University of Barcelona, Latin Philology Department) - Gorrochategui, Joaquín (UPV/EHU, Classic Studies Department) - Pescador, Aitor - Esain, Peio - Agirre-Mauleón, Jantxo (Aranzadi Science Society)

Abstract format: Oral

At the top of Mount Arriaundi, located at an altitude of 942m and 24km from Pamplona (Itza, Navarre), archaeological excavations have been carried out over the last 11 years around the Early Middle Age monastery of Doneztebe (1075-1100 AD). This site must be understood as part of the policies of the monarchy of the Kingdom of Pamplona for the control and domination of its territory. As this is a strategic site, in an earlier phase of the Roman period (I - III centuries AD) it was also used as a defensive enclave as it visually dominates the city of Pompaelo and the route of the Roman road Iler XXIV that linked Burdigala with Asturica. In the course of the excavations, a Roman altar (I-II century AD) dedicated to the indigenous deity Larrahe was unearthed from an early medieval well filled with construction debris. Epigraphic and linguistic studies link it to the Vasconic language and to three other similar altars dedicated to this deity found by chance in the south of Navarre. This is a good example of syncretism, a mixture of local beliefs and customs adapted to typical Roman votive altar formats. Furthermore, the location of this new altar is the northernmost artefact of the sort discovered so far, and its proximity to the Atlantic slope provides us with valuable information on the distribution of religious beliefs and the language of the indigenous Vascones that inhabited Navarre.

2 BUILDING + TABULA ANSATA + SKEWERS = TEMPLE?

Abstract author(s): Ravnik, Mateja (Institute for the Protection of Cultural Heritage of Slovenia) - Jančar, Mojca (Terarhis) - Miškec, Alenka (National Museum of Slovenia, Numismatic Cabinet) - Ragolič, Anja (Research Centre of the Slovenian Academy of Sciences and Arts, Institute of Archaeology) - Tica, Gojko (Tica Sistem)

Abstract format: Oral

In the Roman period, the settlement of the area between Sevnica and Brestanica in Slovenia shows an interesting picture. Most researchers place via publica Celeia – Neviodunum on the left bank of the Sava River, where is the majority of the discovered Roman villas. An exception is the archaeological site Log – Groblje located on the right bank. In 2008, the area was investigated as a part of the construction of hydroelectric power plants. A multi-period site, with the majority of architectural and material remains belonging to the Roman period, was discovered.

Three bigger buildings, which probably belong to a complex of villa rustica, perhaps a river port or a transshipment station, represent the first Roman phase. To the second Roman phase, we attributed only one smaller building. It has relatively strong rubble layers and massive foundations. It has only two rooms, with all the walls built simultaneously, and it was located in the middle of the first phase building. Next to the building, a larger waste pit, which contained pottery, coins, metal objects and carbonized figs and olives, was also documented. In the rubble layers around the building, we discovered numerous iron objects interpreted as skewers with endings in the form of animal heads. Similar skewers were found as well in the temple in Colatio/Stari trg near Slovenj Gradec. Additionally, in the rubble layers was a large number of coins from the middle of the third and first half of the fourth century and 11 fragments of marble slabs, three of which have incised parallel lines, probably an inscription field in the form of a tabula ansata.

Perhaps, based on the stratigraphic situation and the discovered archaeological finds, we can interpret the building as a smaller temple erected after (part of) the estate was abandoned.

3 URBAN TEMPLES AND PAGANISM IN THE FOURTH-CENTURY LEVANT: PRAGMATISM AND IDEOLOGY BETWEEN ARCHAEOLOGY AND LITERATURE

Abstract author(s): Dolci, Jacopo (University of Nottingham)

Abstract format: Oral

The fourth century was a crucial moment for the Roman Empire as Christianity took hold first with Constantine the Great's Edict of Milan (313) and then became the state religion under Theodosius, as an effect of the edict of Thessaloniki (380). Literary sources widely advocate for an immediate 'de-paganization' of cities, culminating in Christian violence and raids on temples; a pattern which seems however poorly represented in the archaeological records. In fact, both the recent excavation projects (e.g. Caesarea, Hippos, Sepphoris), and the extensive reconsideration of early-1900s archaeological investigations (e.g. Baalbek, Palmyra, Gerasa) support a more nuanced situation in which urban temples were generally left untouched or little affected.

This paper provides an overview of the archaeological evidence for the closure, dismantlement, reuse, and preservation of urban pagan sanctuaries, which will be integrated and compared with the late antique literary evidence. The aim is to understand what happened to temples in the fourth century and get crucial insight into the different possible 'fates' these buildings underwent. Moreover, it will explore whether and how governments endorsed actions against sanctuaries and to what extent they worked; or whether the 'afterlife' of sanctuaries was the result of a widespread adaptation to common circumstances. This paper will shed light on the religious life of a multi-confession region as the late antique Levant through spatial analysis and by advancing an interpretation of the variegated situation in which the temples were in the fourth century.

4 A SYSTEMATIC GIS-BASED ANALYSIS OF TEMPLE SITES DEVELOPMENTS IN THE RELIGIOUS LANDSCAPE OF THEBAID IN THE LATE ROMAN PERIOD

Abstract author(s): Guimerà, Ariadna (Autonomous University of Barcelona)

Abstract format: Oral

The story of religion in Roman Egypt was dominated by the triumph of Christianity at expense of pagan religion. Generally studied in binary terms, the decline of the old gods of Egypt had its own dynamic away from the orthodox Church. Indeed, there were material signs that all was not well with the Egyptian paganism before Christians had achieved the religious control of the Empire. And Thebes, the old capital, is an excellent example of that.

Since the middle of the third century the hieroglyphic and Greek texts on the walls of temples showed a very low quality work. For thousand years, pharaohs and Ptolemaic kings had recorded their involvement to the restauration and embellishment of temples as a sign of wealthy cultic activity. This legacy continued under the Roman Empire but at a speedily declining rate. At Deir el Medina there is nothing later than Domitian; at Philae of Caracalla; at Esna

of Decius. So, it is difficult to avoid that the imperial support for decoration of Egyptian temples drop after Tiberius, shrank after Hadrian and fade away with Constantine.

This communication will give a panoramic view of the sunset of institutional Egyptian and Greco-roman religion through the study of the pagan temples in the Thebaid and how this was related with the outset of Coptic Church. Furthermore, through the historical analysis it will be reconsidered the historiographical phenomenon of the abandon, destruction and Christianization of pagan temples and which are the new archeological perspectives for its study.

5 COMMUNITY AS CULT IN PRE- AND POST-CONQUEST GAUL

Abstract author(s): Irvin, Aaron (Murray State University)

Abstract format: Oral

Beginning with the concept of orthopraxis, this presentation will focus on cult practice and ritual as a communal activity, defining the make-up and participants of communities from imperial, provincial, tribal, municipal, and local levels through participation in cult and interaction with conceptions of the divine. Cult and communal ritual associated with cult served to define the boundaries and contours of communities, and clearly identify, through orthopraxic activities, those to be credited as either insiders or outsiders. In doing so, this chapter will argue that Gallic communities developed first as cult communities tied through ritual to certain sites within Gaul, and that it was this common underlying cultic membership and cultic connection with specific topoi that defined Gallic identity. The subsequent development of Gallo-Roman religion was not the development of a new religious belief system, or even the syncretism of Roman and Gallic religious customs, but rather a new system of political/religious order that incorporated a new community of religious actors and a new system of political authority.

6 BEING ROMAN IN MALTA. ARTEFACTS, PEOPLE, AND RITUALS IN THE SANCTUARY OF TAS SILG

Abstract author(s): Grassi, Elisa (CRN-ISPC) - Bonzano, Francesca - Airoidi, Filippo (Università Cattolica del Sacro Cuore, Milano)

Abstract format: Oral

Malta, placed in the very centre of the Mediterranean, has always been open to influences from a large number of regions and cultures. The Maltese sanctuary of Tas-Silg has witnessed many physical and cultural transformations: the structures of the original late neolithic temple were re-used for a Phoenician sanctuary dedicated to Astarte, and it subsequently was turned into a Hellenistic temple of Hera, a Roman shrine for Juno, and eventually a Byzantine church consecrated to the Virgin Mary.

As the name of the female deity changed over time, her main features remained unchanged, in a process of interpretatio well documented within the Roman world.

The Roman imperial age is the least known period of the history of the sanctuary, given the lack of significant building activity. Yet, there is evidence suggesting that Malta – now a Roman province – still perceived the goddess worshipped here as a strong element of political and religious identity. Therefore, it was attempted to draw a clearer picture of the sanctuary in this period, with its rituals and its daily life, relying on the data provided by stratigraphic evidence and artefacts. Endeavouring to assess quantification, chronology, provenance and distribution of pottery and small finds can highlight patterns in artefacts consumption; likewise, striving to reconstruct the spatial transformation of the site can enhance our comprehension of changes in rituals and ceremonies. Moreover, a better knowledge of the dynamics of the decline of the sanctuary in the context of the development of Malta during the Roman Imperial age will provide a deeper understanding of the shifting of cultural and political balance within the island.

7 THE CRAFTSMAN'S TALE : GROPING FOR RITUALS AND BELIEFS IN THE ARCHAEOLOGICAL RECORD

Abstract author(s): Willems, Sonja (Royal museums of Art and History, Brussels)

Abstract format: Oral

Traces of rituals and beliefs are not easy to grasp in the archaeological record, since most critique dismisses the presence of structured gestures, shaming the rapid overinterpretation of “if we don’t understand it, it’s ritual”. This has in recent years often resulted in the omitting of ritual behavior outside the restricted context of sanctuaries.

A quick look into ethnographic and cross-chronological literature on craft spaces and handicraft in general, indicates that beliefs and the gestures that accompany them, whether they leave traces in the archaeological record or not, are part of the everyday life of the craftsman. This is surely the case for most of the crafts where fire plays an important role in the production process. Whether it concerns prayers, or forbidding the presence of women, or the offering

of anthropophagic objects to protect the production, each stage of the process is probably accompanied by specific gestures, known, and performed by every craftsman of a given group.

Based on recent survey on pottery craft spaces in the North of France, systematic analysis of the installation and abandoning of pottery kilns has shown presence of recurring gestures. Comparison is often difficult because of the limited publication of the fillings of the structures, mostly reduced to the illustration of the empty kiln structure, as well as their partial or rapid excavation. This contribution therefore wants to point out the possibilities of detailed excavation, combined to the development of a database for gestures in craft spaces that will enable to assess the possibility of structured behavior.

8 CULTURAL EXCHANGE, PUNIC INFLUENCES, OR JUST FASHION? THE USE OF CUPAE IN FUNERARY CONTEXTS IN LUSITANIA AND BAETICA

Abstract author(s): Cáceres-Puerto, Carlos (Instituto de Arqueología de Mérida-CSIC) - Ramos Soldado, José Luis (Laboratory of Palaeobiology, Andalusian Institute of Historical Heritage-IAPH)

Abstract format: Oral

Mobility and cultural exchange were not uncommon during Roman times around the Mediterranean, as it continued a long-lasting tradition of interconnectivity spanning hundreds of years. However, when we address migration we often associate it with warfare and forceful displacement of population, rather than economic and cultural mobility, whether it was undertaken voluntarily or not. It usually leads us to misjudge the implications for the people involved in these processes, and the impact they had on their destinations. Without modern communication systems, migration in Antiquity often implied a one-way ticket to the unknown, which was often accompanied by a sense of cultural loss, uncertainty, and eagerness to identify themselves with their motherland. Upon their deaths, those fortunate enough had the opportunity to build something to be remembered for. However, those funerary monuments tell us more than a desire for eternity, conveying the cultural background of the displaced, and preserving their cultural ethos in a foreign land.

In addition, these conveyors of identity were often copied by local communities eager to assimilate the newest fashion trends, even in the funerary monuments. Cupae have been present in the Iberian Peninsula since Roman Republican times. However, they belong to a far earlier cultural background. They originated in Eastern Mediterranean, later spreading their presence through North Africa. This Semitic origin was not ignored during the Punic conquest of Southern Iberia, as it was widely used in several settlements. Hence, this cultural background made us question the purpose, and reason, of these funerary monuments in Southern Iberia: were they transmitting the story of a community, or following a cultural trend instead? To what extent could both be mutually exclusive? In this paper, we analyse the presence, distribution, and cultural background of the cupae in the provinces of Lusitania and Baetica.

540 ZOOMING IN/OUT/PAST THE VIKING AGE: INTEGRATING LOCAL, REGIONAL AND GLOBAL FUNERARY PRACTICES IN THE BALTIC-NORTH SEA-ATLANTIC AXIS, AD750-1050

Session theme: 6. Contested Pasts & Presents

Session organisers: Ó Ríagáin, Russell (School of Archaeology, University College Dublin) - Espolin Norstein, Frida (Stockholm University) - Maldonado, Adrián (National Museums Scotland)

Session format: Regular session

For many parts of the Afro-Eurasian landmass, the period c.AD750–1050 was characterized by a contraction of conceptual space and increased chains of social interaction and interdependence. This session will trace practices of transculturation in the well-documented funerary spaces of one part of that landmass: the Baltic–North Sea–Atlantic axis. Change and stasis in funerary practices will be a point of entry for exploring local, regional and pan-regional material manifestations of the processes of transculturation brought about through the resulting movement of people, objects, and ideas in an area not generally studied as a zone of networked identities.

The agents of change in this zone have traditionally been referred to as ‘vikings’, but migrants, raiders, and traders were just some of the many people on the move. Scholars, nomads, diplomats, craftspeople, settlers, missionaries, refugees, the enslaved, and the betrothed were all part of this maelstrom of movement, with a range of short- and long-term outcomes in terms of transculturation. Both human and non-human agents are at play here, as the serialized production of trade goods and influxes of raw materials created new chains of interdependence and avenues for transculturation. Funerary practices in context allow us to study these processes in progress.

Papers seeking to integrate localized shifts in material manifestations of funerary practices with the wider social processes at work are particularly welcome, including those which seek to decentralize agency in this period. Also welcome are treatments of the problematic binary of colonizer–colonized, and the way that transculturation better

captures the material record resulting from these complex interactions over time. So too papers concerned with questioning the exceptionality of the period. Finally, participants will be encouraged to critique—or justify—loaded concepts like hybridity, mestizaje, acculturation, and syncretism, in the ongoing deconstruction of the existence of bounded ‘cultures’.

ABSTRACTS

1 VIKING GRAVES? REGIONAL DIVERSITY IN VIKING AGE BURIAL PRACTICES

Abstract author(s): Norstein, Frida Espolin (Department of archaeology and classical studies, Stockholm univiersity)

Abstract format: Oral

Burial practices of the Viking Age are famously diverse, ranging from rich ship burials in great mounds to small pits with a few grams of cremated human bone. Despite this variation, Viking burial is still often regarded as a meaningful concept. This paper will examine regional variation in Viking Age burial practices, assessing similarities and differences between graves from Britain, Ireland, Iceland, Norway, and Sweden. It will argue that the graves often seem to be defined by what they are not, rather than what they are, either in opposition to local practices, when discovered in a settlement context, or later Christian practices when discovered in Scandinavia. The paper will also focus on how the burial practices are used to construct narratives, especially in connection with identities and beliefs. It aims to highlight how essentially very different practices are used to make similar arguments about conversion and identity construction. It will suggest that the burials have traditionally served an illustrative role where their pagan/Scandinavian nature is the starting point for the analysis, rather than the subject under discussion.

2 THE LONG, STRANGE JOURNEY OF VIKING-AGE RINGED PINS

Abstract author(s): Maldonado, Adrián (National Museums Scotland)

Abstract format: Oral

Ringed pins are the calling card of the Viking Age in Britain and Ireland: small, low-value metal cloak fasteners, found in dressed burials, and frequently encountered as stray finds. They have a complex trajectory, beginning as Irish dress items in the pre-Viking period. From the middle of the ninth century, they began to be mass produced in the newly-founded trading settlements of the Viking Age Irish Sea, particularly in Dublin. For a short period into the tenth century, they are found across the Scandinavian-speaking diaspora, as far as Iceland and L’Anse aux Meadows, Newfoundland, showing that they were worn by a new class of migrant seafarers. However, in Ireland and Scotland, ringed pins continued to be made and evolved into a variety of ringed and unringed styles long after they fell out of fashion in Scandinavia. Reflecting on the afterlife of these dress fasteners as an archaeology of Gaeldom forces us to reassess their role in the funerary rituals of the Viking Age, and revisit the way we apply the term ‘Hiberno-Norse’.

3 COPING WITH CHRISTIANITY: VIKING REACTION TO CHRISTIAN REQUIREMENTS AND BURIAL CUSTOM IN THE ISLE OF MAN

Abstract author(s): Steinforth, Dirk (Independent Researcher)

Abstract format: Oral

When Vikings conquered and settled in the Isle of Man in the later ninth century, they introduced a distinctly pagan burial custom in the Island that would not have been out of place in their Scandinavian homelands, including splendidly furnished mound- and boat graves. In stark contrast, the local Manx were Christian and buried their dead in plain flat graves without any objects at all.

Subsequently, the Viking settlers became more familiar with the Christian faith of their neighbours (and frequently, no doubt, in-laws) and gradually accepted baptism. During this phase of syncretism and spiritual reorientation, furnished burial became diminished until it disappeared entirely from the archaeological record in the 960s.

In the face of the meagre and unpretentious burial custom they were now required to follow, the Manx Vikings adopted a completely new strategy to hold on to the socially efficacious displays the opulent mound graves had offered. Appropriating a local tradition of long standing, they found means to demonstrate the status of their dead in the custom of erecting stone monuments – while at the same time celebrating and promoting Christianity.

This paper investigates the responses the newly Christianised Vikings in the Isle of Man developed in order to cope with the changes in funerary and memorial custom the new faith imposed on them.

4 **UNEARTHING IDENTITY: A STATISTICAL ANALYSIS OF THE VIKING AGE FURNISHED BURIALS OF NORTHERN ENGLAND**

Abstract author(s): Kinirons, Samuel (University College Dublin)

Abstract format: Oral

The causes of the changing of funerary practices across the Viking Age world remain the subject of debate. It is nonetheless clear that the forms, settings and grave-goods associated with these burials represent a series of choices that can be seen as reflexive expressions of identity. Using statistical analysis, this paper seeks to improve the understanding of the evolution of and variation in furnished burials within Viking Age northern England. A delineation of the spatial patterns within the data will lead to a greater understanding of the regional interactions and pressures which moulded of conceptions identity during this period.

The north of England presents an ideal case study with which to approach this complex topic. It has been argued that there exists a regional distinction in the nature of the grave assemblages on either side of the Pennine Hills. Those to the west have been seen as sharing closer affinities with the Isle of Man and Dublin, while those to the east are more broadly comparable to the furnished Viking Age burials of southern England. This study will apply statistical methods such as cluster analysis to test this and provide a tighter definition of the nature of this perceived Irish Sea/North Sea divide. The variables examined will not solely consist of the grave-goods. Where available, grave-form, landscape setting, age, gender, biological sex and isotopic data will also be included. Data relating to the date of the burials (typological or scientific) are of particular interest. This study's statistical approach will aid the identification not only of spatial patterns but also temporal ones. This is significant as the relative chronology of the Viking Age furnished burials of Britain and Ireland remains poorly understood. The paper will conclude by interpreting these results and discussing future directions of research.

5 **TRANSCULTURATION IN ACTION? ASSESSING STASIS AND DYNAMISM IN FUNERARY PRACTICES IN SCANDINAVIA AND AMONG THE SCANDINAVIAN DIASPORA, C.AD750-1050**

Abstract author(s): Ó Ríagáin, Russell (University College Dublin)

Abstract format: Oral

Transculturation occurs both between individuals and groups of individuals, on (g)local and more global levels. This observation helps move away from treating the evidence in terms of binaries such as pagan-Christian, migrant-native, etc., and to acknowledge and embrace the messiness of social interaction. With this in mind, this paper will identify and explore the changes—or lack thereof—in funerary practices and the related phenomena of stone memorials and the deposition of material culture in media such as soil and water in a period characterised by intensified social entanglements in the Afro-Eurasian landmass, focussing principally on Scandinavia and territories associated with the Scandinavian diaspora through a group of representative case studies.

The paper will explore the degree to which we as archaeologists are assigning psycho-social identities from the material remains of a funerary drama involving human remains carried out by agents whose intentions and beliefs we can only guess at based on (often later and decontextualised) texts and comparison to similar practices?

The most important considerations for this paper, though, are whether local and more widespread changes in funerary practices occurred, and how they might be identified and interpreted in light of a critical approach to the evidence. Change is not always as obvious as may seem, as will be outlined. For example, recent radiocarbon-based work on cremation burials in Ireland and northern Britain has demonstrated that what may seem an 'intrusive' practice associated with migration is in many instances a local continuation of practices stretching from the Neolithic well into the early medieval period. Even where change may be identified, the shift from one practice to another (e.g. furnished to unfurnished inhumation) may not have been a stark jump from one practice to another involving a sudden ideological shift or act of settlement.

542 **RECONSTRUCTING BIOLOGICAL RELATEDNESS AND INFERRING HUMAN RELATIONS IN THE PAST**

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Rivollat, Maité (Ghent University; Durham University; Bordeaux University; Max Planck Institute for Evolutionary Anthropology) - Frieman, Catherine (Australian National University) - Haak, Wolfgang (Max Planck Institute for Evolutionary Anthropology)

Session format: Regular session

Kinship is a core element of small-scale societies, but it has not traditionally been a focus of archaeological research since the dynamic social relations that emerge from kinning practices are difficult to access from fragmented archae-

ological data. Funerary sites are among the few contexts that yield some evidence for intimate relations between individuals, but inferring the social practices of living people from the layout of their dead is fraught.

Over the last decade, as ancient DNA methodologies have advanced, we have witnessed the reconstruction of a growing number of genetic pedigrees, from first-degree pairs to massive trees, as well as identity-by-descent analysis giving insight into more distant links. Together, these data can provide a basic genetic framework, on which archaeological and anthropological contexts can build on by means of integration, which then allows inferences on social practices. Yet biological patterns of relatedness may map imperfectly onto complex social relations between individuals, communities, and emic understandings of lineage or descent. For instance, queer relations and others that do not result in children are impossible to discern from genetic results. We think it is time to develop an approach that brings together social and biological data to understand the complexities of past kinship.

This session aims to work across different approaches to kinship in the past, building on data and interpretative frameworks from all involved disciplines to push the discussion further towards a more integrated method for understanding kinship and relatedness among ancient societies as well as to outline the epistemological limitations.

We welcome researchers involved in ancient DNA, archaeology, bioarchaeology, and social anthropology working on any time, period, or data type. We particularly invite new case studies developing interdisciplinary methods to reconstruct biological relatedness and infer social structures in ancient groups or populations as well as re-evaluations of previously published work.

ABSTRACTS

1 GENDER RELATIONS, PATRILOCALITY AND RELATEDNESS AT THE BURIAL GROUND OF NITRA, SLOVAKIA

Abstract author(s): Hofmann, Daniela (University of Bergen) - Bickle, Penny (University of York) - Gelabert, Pere - Cheronet, Olivia (University of Vienna) - Tvrđý, Zdeněk (Moravian Museum) - Fernandes, Daniel (University of Vienna) - Pavúk, Juraj (Comenius University) - Reich, David (Harvard University) - Duffett Carlson, Kellie Sara - Pinhasi, Ron (University of Vienna)

Abstract format: Oral

Neolithisation is generally thought of as a large-scale process taking place over an extended period of time and at a continental scale. In contrast, the increasing availability of high-coverage ancient genomes makes it possible to address micro-scale topics like family and kinship, and how these more personal networks of relatedness change over time. Combining these two scales of analysis remains challenging, as it is often expected that macro-level processes will leave a clear-cut signature in micro-level data, leading to a side-lining of diversity. We use the Linearbandkeramik culture (ca. 5500-4900 cal BC) cemetery at Nitra, Slovakia, as a case study to explore some of these interpretative tensions. The consensus in much recent literature is of patrilineal social formations with a patrilocal residence pattern, in which households consisted of a nuclear family with some dependent relations and property was inherited from father to son. We argue here that the issue is not which of the myriad of different kinship formations is the best fit to the archaeological evidence, but the underlying presumption that such models of relations are static and unchanging. Using paleogenomic data from the cemetery of Nitra (Slovakia), alongside existing isotopic information and the grave good assemblages, we reassess the prevalence of patrilocality, discuss the role of kinship relations in the provision with grave goods and in burial ritual continuity, suggest possible alternatives to the 'nuclear family' as the basic unit of Neolithic society and reflect on the role of personal mobility in forming kin.

2 INFERENCE ON REGIONAL NETWORKS BASED ON LOCAL BIOLOGICAL TREES, THE EXAMPLE OF THE FRENCH NEOLITHIC SITE OF GURGY, LES NOISATS'

Abstract author(s): Rivollat, Maité (University of Ghent; Durham University; University of Bordeaux; Max Planck Institute for Evolutionary Anthropology) - Rottier, Stéphane - Deguilloux, Marie-France (University of Bordeaux) - Haak, Wolfgang (Max Planck Institute for Evolutionary Anthropology)

Abstract format: Oral

The reconstruction of genetic relatedness in archaeological contexts has rarely been feasible, but thanks to the recent optimization of ancient DNA methods, it is now possible to reliably reconstruct biological relationships. What may sometimes seem anecdotic at the site level can reveal insightful when examining population structure and social behaviors.

The extensive genomic analysis of the French Middle Neolithic site of Gurgy 'les Noisats' in the Paris Basin has allowed us to reconstruct two massive pedigrees, one connecting 63 individuals over seven generations, and another with 10 individuals over four generations. We inferred a patrilocal and patrilineal system, as well as the practice of female exogamy, confirmed by strontium analyses.

We explored the non-local female diversity and their relationships and discovered a striking absence of close genetic affinities between them. Moreover, the overall length of runs of homozygosity in the group suggests a wider regional network. The Paris basin at this period is well known for massive funerary monuments belonging to the Cerny culture, called Passy-type structures. In contrast, Gurgy is characterized by an absence of monuments and therefore of potential selection of individuals buried there according to economic or social hierarchies. Furthermore, the cultural attribution of Gurgy to the Cerny culture remains unclear, with multiple influences from different cultures. While the archaeological data suggests an isolation of the site from the local context, the genetic evidence shows strong regional links with a large biological network over several generations. One plausible hypothesis would be that the site represents the burial practices of the non-elite part of the Cerny population in the region.

Overall, this study provides insights that go beyond immediate genetic relatedness and allows us to explore the group structure, its size, funerary and settlement practices in a much broader social and cultural context.

3 RE-EVALUATING KINSHIP IN NEOLITHIC IRELAND

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Abstract format: Oral

Neolithic Ireland is perhaps most widely recognised for its impressive megalithic monuments, such as the complex of late 4th millennium passage tombs within the UNESCO WHS of Brú na Bóinne, Co. Meath in eastern Ireland. Archaeologists have long been interested in trying to uncover the social relations that brought these diverse monuments into being. Most recently, it has been claimed that dynastic elites drove the construction of passage tombs, based in part on the sequencing of 44 whole human genomes from Irish megalithic monuments (Cassidy et al. 2020). We contend that the available evidence is insufficient to adopt a model of a socially distinct dynastic elite in Neolithic Ireland. We make the case that new scientific approaches to the exploration of kinship necessitate robust and appropriate social modelling and interpretative frameworks. Scientific methods alone are not adequate to reconstruct the complex and contingent social histories which occupy archaeologists, but their results in combination with well-founded social analysis can allow us to imagine alternate and richer pasts.

4 KINNING IN DEATH AT MIDDLE TO LATE BRONZE AGE MEGIDDO

Abstract author(s): Eisenmann, Stefanie (Theological Faculty, Humboldt Universität zu Berlin) - Kalisher, Rachel (Joukowsky Institute for Archaeology and the Ancient World, Brown University) - Waldman, Shamam (Department of Human Evolutionary Biology, Harvard University; Department of Genetics, Harvard Medical School) - Martin, Mario (Institute of Ancient History and Ancient Near Eastern Studies, University of Innsbruck) - Cradic, Melissa (Badè Museum of Biblical Archaeology, Pacific School of Religion; Department of History, University at Albany) - Adams, Matthew (The Center for the Mediterranean World) - Agranat-Tamir, Lily (Department of Genetics, The Alexander Silberman Institute of Life Sciences, Faculty of Science, The Hebrew University of Jerusalem; Department of Statistics and Data Science, The Hebrew University of Jerusalem) - Reich, David (Department of Human Evolutionary Biology, Harvard University; Department of Genetics, Harvard Medical School, Boston) - Stockhammer, Philipp (Institute for Pre- and Protohistoric Archaeology and Archaeology of the Roman Provinces, Ludwig Maximilians University; Max Planck Institute for Evolutionary Anthropology) - Finkelstein, Israel (School of Archaeology and Maritime Cultures, University of Haifa; Department of Archaeology and Ancient Near Eastern Civilizations, Tel Aviv University)

Abstract format: Oral

In 2020, Agranat-Tamir et al. published the largest DNA study to-date on ancient individuals from the southern Levant, featuring 35 individuals from the ancient city of Megiddo. Onto this dataset of 35 we add newly generated full-genome aDNA data of another 24 individuals. Whereas Agranat-Tamir et al. focused mainly on large-scale population genetic dynamics, here we seek to re-integrate the numerous attested cases of close biological relatedness at Megiddo with the respective burial contexts to explore kin-formation practices (i. e., kinning) at the site.

All studied individuals from Megiddo were buried within city limits, in most cases in graves located under the floors of contemporary residential structures. By doing so, the houses' living inhabitants chose to maintain a close physical connection with a select group of deceased. At the same time, a close relationship between the buried individuals is inferred from the arrangement of graves in clusters or from the placement of multiple bodies within single burials. On several occasions, cases of close biological kinship correspond to such close spatial arrangements of skeletal remains.

We interpret these specific burial practices at Megiddo as mechanisms of kinning through creating physical connections between 1) the living and the dead as well as 2) between the dead themselves.

Due to the density of genetic links between individuals buried in connection with one residential structure (Area K courtyard house) and through a comparison of burial contexts, we are able to identify one likely case of kinship in a double burial that was solely based on social relations.

5 ARCHAEOGENOMIC PILOT RESEARCH OF KAMENICE, A PREHISTORIC ALBANIAN TUMULUS (1600-500 BCE)

Abstract author(s): Jia, Xiaowen (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology; Max Planck Harvard Research Center for the Archaeoscience of the Ancient Mediterranean - MHAAM; Institute for Pre- and Protohistoric Archaeology and Archaeology of the Roman Provinces, Ludwig Maximilian University of Munich) - Skourtanioti, Eirini (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology; Max Planck Harvard Research Center for the Archaeoscience of the Ancient Mediterranean - MHAAM) - Bejko, Lorenc - Amore, Maria - Aliu, Skender - Pojani, Iris (Department of Archaeology and Heritage Studies, University of Tirana) - Ringbauer, Harald - Krause, Johannes (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology; Max Planck Harvard Research Center for the Archaeoscience of the Ancient Mediterranean - MHAAM) - Stockhammer, Philipp (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology; Max Planck Harvard Research Center for the Archaeoscience of the Ancient Mediterranean - MHAAM; Institute for Pre- and Protohistoric Archaeology and Archaeology of the Roman Provinces, Ludwig Maximilian University of Munich)

Abstract format: Oral

Situated in southeastern Albania at the interface of the Aegean and the Adriatic, the Tumulus of Kamenice was used for inhumations from 1600 to 500 BCE. In this work, we generated genome-wide SNP data for 25 individuals from Kamenice that span the full time transect, providing the unique and first possibility for insights into biological relatedness and demography of a single tumulus in Late Bronze Age and Iron Age Albania.

We identified a genetically homogeneous population throughout the respective time in contrast to all societal transformations in the wider region. Moreover, we found evidence for a patrilineal society, within which all the males' Y chromosomes belong to two distinct sub-groups of R1b1a1b (M269). We identified the biological relatedness up to 6th degree with IBD analysis. The amount of relatedness raised after 750 BCE. We also detected a signature of a population size decrease around 750 BCE using HapROH, which coincides with the prevalence of Y chromosome lineage R1b1a1b1b3 and a new way of grave construction. Besides, a female individual was biologically related to individuals both before and after 750 BCE. Overall, all the ancient DNA evidence support a local population bottleneck event.

6 INVESTIGATING KINSHIP AT THE IRON AGE CEMETERY OF WETWANG SLACK, EAST YORKSHIRE (UK)

Abstract author(s): Armit, Ian (University of York) - Büster, Lindsey (University of York; Canterbury Christ Church University) - Fischer, Claire-Elise (University of York) - Olalde, Iñigo (University of the Basque Country; Ikerbasque—Basque Foundation of Science; Harvard University) - Booth, Tom (Francis Crick Institute) - Reich, David (Harvard Medical School)

Abstract format: Oral

Ancient DNA analysis of c. 400 individuals from the Iron Age cemetery of Wetwang Slack, East Yorkshire (UK), has recently been undertaken as part of the COMMIOS Project (Communities and Connectivities: Iron Age Britons and their Continental Neighbours). The cemetery belongs to the so-called 'Arras Culture', characterised by individual graves under square barrows and including occasional chariot burials (which are otherwise rare in Britain). As the largest excavated cemetery in Iron Age Britain, the Wetwang Slack assemblage, dating to the 3rd/2nd centuries BC, has enormous potential to inform our understanding of the role of biological relatedness as a structuring principle within Iron Age kinship practices. While several previous aDNA and isotope studies of prehistoric communities in Britain and Continental Europe, principally dealing with Neolithic and Bronze Age populations, have suggested a prevalence of patrilineal descent and female exogamy, the picture emerging from our work at Wetwang Slack offers a contrasting picture. Initial results demonstrate a high degree of biological relatedness among females (and much less among males), suggesting that kinship practices, within this community at least, were quite differently structured. In this paper we examine the implications of this emergent patterning for our understanding of British Iron Age societies.

7 USING ANCIENT DNA AND ISOTOPES TO EXPLORE FEMALE CAPTIVITY AND KINSHIP

Abstract author(s): Sedig, Jakob (Harvard University) - Cameron, Catherine (University of Colorado)

Abstract format: Oral

In the last decade, the exponential growth of ancient DNA and isotopic studies has revealed intriguing discrepancies in the movement and ancestry of males and females, particularly in post Neolithic Eurasia. In this paper we focus on what we argue are two interrelated trends: the significant over-representation of males in the ancient DNA record, and evidence of females being more mobile and having more heterogeneous genetic ancestries than males. While these patterns are often ascribed to exogamous marriage practices—non-local females marrying into male social groups—using a global ethnographic database we argue that many of these mobile, genetically diverse females were initially introduced as captives to their new social groups. We then explore how these patterns can provide new insights into ancient kinship systems, most notably how the dynamic social identities of captive women allowed them to integrate into new social groups in various ways. Though normative assumptions about captivity would seemingly limit a captive female's autonomy, ethnographic studies in small scale societies suggest that some could be integrated into captor kin networks and lived relatively normal lives.

8 FROM KINSHIP TO COMMUNITY: RECONSTRUCTING THE SOCIAL STRUCTURE OF A MEROVINGIAN POPULATION IN NIJMEGEN, THE NETHERLANDS

Abstract author(s): Altena, Eveline (Dept. of Human Genetics, Leiden University Medical Center) - Olalde, Iñigo (BIOMICS Research Group, University of the Basque Country UPV/EHU; Department of Genetics, Harvard Medical School; Ikerbasque—Basque Foundation of Science) - Kootker, Lisette (Geology & Geochemistry cluster, Faculty of Science, Vrije Universiteit Amsterdam; CLUE+, Vrije Universiteit Amsterdam) - van der Linde, Constance (Fysisch antropologisch onderzoeksbureau Tot op het Bot) - Hendriks, Joep (Bureau Archeologie en Bodemkwaliteit, Gemeente Nijmegen) - Theuvs, Frans (Faculty of Archaeology, Leiden University) - Reich, David (Department of Genetics, Harvard Medical School; Broad Institute of MIT and Harvard, Cambridge; Department of Human Evolutionary Biology, Harvard University; Howard Hughes Medical Institute)

Abstract format: Oral

In 2011 and 2015, just north of Nijmegen, in present day Lent, a Merovingian cemetery dated in the 6th century was excavated, uncovering 55 inhumation graves and 24 cremation graves. Nijmegen is one of the oldest cities of the Netherlands, founded during the first century CE by the Romans at the south bank of the river Waal, close to the present-day German border. The Late Roman period (270-470 CE) was characterized by economic, political and social instability, resulting in substantial depopulation of the Netherlands, but Nijmegen and its surrounding area show evidence of at least a minimal level of continuity of occupation into the early medieval Merovingian period. At the same time, however, this cemetery dates in the Migration period, and it can therefore not be excluded that this cemetery was used by new settlers of this area.

To gain fundamental and profound insights into the demography, social structure and origin of the community that used this cemetery, multidisciplinary bioarcheological research (osteology, isotopes and aDNA) on the inhumed individuals was conducted. This paper focusses on the kinship analysis, and how these data enhance our understanding of the inhumed community.

Fifty-one individuals provided sufficient genome wide data to reconstruct close and more distant genetic kinship by inferring kinship ratios, allelic mismatch rate patterns and IBD. Combined with information on genetic sex, age at death, and (absolute) datings pedigrees could be reconstructed.

The preliminary results suggest that the cemetery has been in use by just a few generations and at least nine families, although only half of the studied individuals are related to someone else in the cemetery. Outside the reconstructed families, no one shared mitochondrial DNA and also the Y chromosome shows much diversity, indicating a lack of strong matri- or patrilineal settlement patterns.

9 KINSHIP AND SOCIAL STRUCTURE OF AVAR PERIOD DESCENDANTS OF STEPPE COMMUNITIES INFERRED FROM ANCIENT DNA BASED PEDIGREES

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Abstract format: Oral

The Avar period in East-Central Europe saw the appearance of populations carrying culture and genomic components typical of the Eastern Eurasian and Pontic-Caspian Steppe, confirming one of the historical narratives on the origin of the Avar Khaganate. These people and their descendants settled in the Carpathian Basin for around 250-300 years coexisting with populations of different European cultural and biological backgrounds. By studying four entire Avar period cemeteries associated to these communities, with a combination of new ancient genomic data, archaeological, anthropological and historical contextualization we inferred extended multigenerational pedigrees that revealed unique features of their kinship system and patterns of local mobility that were impossible to assess before. We were able to infer clear and strict patterns of genealogical descent such as patrilineality, patrilocality and female exogamy. These patterns are shared between the four sites analyzed were we also observed a complete avoidance of consanguineous unions. We also found multiple instances of a very specific practice that we interpret as levirate marriage, involving closely related males having offspring with the same female. These characteristics can be traced in historical sources as well as in anthropological studies on present-day traditionally nomadic Steppe societies. These extended pedigrees also allowed us to assess important communities shifts involving groups with the same genomic ancestry, that would have gone undetected by standard population genomic tests for ancestry discontinuity. We could therefore test a long-term archaeological hypothesis about population shifts occurred during the Middle Avar period attested by important changes in the material culture and burial rites that could be in the future extended and tested on further sites.

10 INFERRING SOCIAL STRUCTURE AND BIOLOGICAL RELATEDNESS OF EARLY MEDIEVAL POPULATION IN MORAVIA USING ANCIENT DNA

Abstract author(s): Zlámalová, Denisa - Macháček, Jiří - Dresler, Petr - Přichystalová, Renáta (Department of Archaeology and Museology, Masaryk University) - Poláček, Lumír (Institute of Archaeology, Czech Academy of Sciences) - Samu, Levente (Institute of Archaeological Sciences, Eötvös Loránd University) - Velemínský, Petr (Department of Anthropology, National Museum, Prague) - Krupičková, Šárka (Institute of Archaeology, Czech Academy of Sciences) - Krause, Johannes (Max Planck Institute for Evolutionary Anthropology) - Hofmanová, Zuzana (Max Planck Institute for Evolutionary Anthropology; Department of Archaeology and Museology, Masaryk University)

Abstract format: Oral

We investigate the period of formation of one of the first Slavic states in the region of Moravia and its impact on societies that inhabited the territory. Due to a limited amount of historical record from this region in Early Middle Ages, various characteristics of the organization of society are still debated, especially the rise of Early Mediaeval elite groups. With archaeogenetic approach, we are able to infer certain aspects of social structure, kinship and marital practices from biological relatedness and archaeologically defined social status of studied individuals.

To look into these patterns, we have archaeogenetically analyzed whole burial groups from several well-known and well-investigated sites that have been strongly associated with elites via archaeological and historical research. Thanks to good DNA preservation at the sites, we have obtained new ancient genomic data from almost all individuals selected. We observe networks of biologically related individuals that, put together with findings from related disciplines, shed light on what the population in Early Medieval Slavic state looked like, what kind of connections they had and how the society was organized. The archaeogenetic data brings the opportunity to observe not only genetic relatedness, but also social kinship and its meaning relative to belonging to the Early Medieval elite.

PREVIOUSLY UNOBSERVED SOCIAL STRUCTURE IN AN ANCIENT POPULATION: THE CASE STUDY OF A POLYNESIAN OUTLIER COMMUNITY

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Abstract format: Oral

Oceanians are descendants of two main dispersal waves: an early expansion of modern humans out-of-Africa more than 50,000 years ago (ya), extending as far as the Solomon Islands; and the Austronesian expansion, that started around 5,000 ya in Taiwan and peopled the remaining unexplored territories of Oceania up to Polynesia. Subsequent movements within the region created a complex cultural and genetic landscape, including the expansion of Polynesian-speaking groups westward, outside the Polynesian triangle, giving rise to the so-called Polynesian Outlier communities after ~1,000 ya. These recent population movements created a highly differentiated genetic background among present-day Oceanians, and an array of sociocultural systems. The formation process of these systems remains poorly understood.

Here, we study genomic data of more than 100 ancient individuals from the ancient Polynesian Outlier site of Namu, a large burial ground on the Taumako island (Solomon Islands), dated between 700-300 ya. We infer the genetic-sex for all individuals, showing similar proportions of both male and female burials. We also assess the degree of biological relatedness between individuals and find many indicatives of close relations, including 47 parent-child relationships, 27 siblings and over 400 2nd and 3rd degree relationships. We combine these estimates, runs of homozygosity and uniparental haplogroups inferences with archeological data to reconstruct pedigrees over multiple generations. Furthermore, we attempt to study the socioeconomic stratification of the community following an intersectional approach. We create a set of linear regression models to explain the variation in archeologically estimated wealth by age, sex, ancestry, and biological relatedness. Together, the integration of the genetic analyses with the abundant archeological data available for Namu, provide a new perspective into the social organization of a past community. This study contributes to the understanding of Oceanian social structure and its relationship with the genetic history of the region.

KINSHIP FROM CROSS-CULTURAL PERSPECTIVES: A MIXED METHODS APPROACH TO SEEMINGLY QUANTITATIVE ISSUE

Abstract author(s): Cvecek, Sabina (Austrian Archaeological Institute)

Abstract format: Oral

Interdisciplinarity in archaeology is today taken for granted. Interdisciplinary approaches, however, are often synonymous with collaboration experts from natural sciences, including a broad spectrum of physical, chemical, geological, and biological techniques applied to archaeology. Despite the application of extensive array of methods, techniques, and results of the physical and biological sciences, including the aDNA analysis, archaeology is not a natural science. In Europe, archaeology is widely considered as a standalone discipline. Beyond its ivory tower, such as in the North American four-field approach, archaeology is only one of the four subfields of anthropology, which combines archaeology, physical/biological anthropology, linguistics, and socio-cultural anthropology. Therefore, a continuous collaboration between natural scientists and social scientists, including archaeologists, bioarchaeologists and socio-cultural anthropologists, is vital for the advancement of European archaeology. While digging the evidence from the ground, the persistent problem archaeologists face is how the materiality of dwellings can be best read and interpreted. The spatial organization of dwellings is a kind of code that can be used to reconstruct kinship practices. From early on, socio-cultural anthropologists have understood that dwellings are central correlates of thought and social organization. Therefore, the relevant expertise of a sociocultural anthropologist may lie in informing archaeologists of the diversity of the observed kinship practices from the present and the recent past so that this may fruitfully contribute to our understanding of the distant past. This contribution draws on research history of kinship research in the Anatolian and Balkan prehistory to outline a new mixed methods approach for contextualizing houses, settlements, and biological

signatures in unified analysis. As researchers, we should take advantage of applying mixed methods approaches to tackle complex issues and value qualitative insights to seemingly quantitative issues. These issues include biological relatedness and inferring human relations in the past.

13 MATTERS OF LIFE AND DEATH: KINWORK AT FUNERALS

Abstract author(s): Frieman, Catherine - Schuster, Caroline (Australian National University)

Abstract format: Oral

For decades, archaeologists have acknowledged that funerary contexts are imperfect mirrors of the living societies who assembled them. The dead, we well know, do not bury themselves. The production of funerary sites can be, and often is, an extended, contested, and carefully stage-managed process. These rites may well be designed with as much or more consideration for the future articulations of social relations as for accurately depicting their past conformations. Consequently, reconstructing social relationships—from status hierarchies to marriage patterns or more diffuse kin relations—is fraught. Here, we consider the funerary sphere as a site of kinwork. We argue that kinning practices form a key part of burial rites as the dead person or persons' relationships are reconsidered, renegotiated, transformed, or manipulated. The goal is to develop a more complex model of kin relations within funerary contexts in order to contribute to a more nuanced archaeology of social practice that compliments emerging discussions of family structure, kinship and relatedness.

A. DIETARY BEHAVIOUR OF EARLY BRONZE AGE BIOLOGICAL KINSHIP GROUPS IN MIKULOVICE (CA.2050-1750BC CZECH REPUBLIC)

Abstract author(s): Drtikolová Kaupová, Sylva (National Museum, Prague) - Papac, Luka (Max Planck Institute for Evolutionary Anthropology) - Langová, Michaela (Institute of Archaeology, Czech Academy of Sciences) - Massy, Ken (Ludwig-Maximilian University Munich) - Friedrich, Ronny (Curt-Engelhorn-Zentrum Archäometrie) - Vytlačil, Zdeněk (National Museum, Prague) - Haak, Wolfgang (Max Planck Institute for Evolutionary Anthropology) - Ernée, Michal (Institute of Archaeology, Czech Academy of Sciences)

Abstract format: Poster

The Early Bronze Age cemetery in Mikulovice, eastern Bohemia, Czech Republic, is one of the largest and richest of the Únětice Culture, and therefore a model site for extensive bioarchaeological studies. This paper will present the results of isotopic reconstructions of diet in the context of biological relatedness inferred from aDNA.

Sampling of all buried individuals (N=109) for aDNA, ¹⁴C dating, radiogenic and stable isotope analyses of Sr, O, C and N enabled us to reconstruct various complexly interwoven aspects of lifeways, at the level of single individuals, biological kinship groups, as well as the entire community. Carbon and nitrogen isotopic values were measured in all individuals older than 6 years, from whom aDNA was successfully recovered (N=81). Both carbon and nitrogen isotopic values differed significantly between biological kinship groups, whereas the differences in nitrogen isotopic values between biologically related individuals were significantly lower than those between unrelated individuals. These results are further discussed with respect to the absolute chronology, grave position and the character of the associated grave goods.

Though the research is still ongoing, the current data suggest that close biological/social relationship was the leading factor driving dietary behaviour of the individuals buried at Mikulovice.

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555 ALL THESE FINDS - CHALLENGES AND POSSIBILITIES ON LARGE URBAN ARCHAEOLOGICAL EXCAVATIONS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Haggren, Georg (University of Turku) - Dahlström, Hanna (Museum of Copenhagen) - Wennerg, Tom (Museum of Gothenburg) - Forsblom Ljungdahl, Veronica (The Archaeologists - National Historical Museums)

Session format: Regular session

Large-scale (rescue) excavations are now a common occurrence in urban archaeology today. This is especially the case in North and Western Europe, where more early modern sites are being excavated. These sites often produce large amounts of finds which causes significant challenges but at the same time offers considerable research potential. Additionally, modern contextual excavation methods together with constantly developing documentation methods, produce a growing amount of information. How to approach these large projects from a find's perspective?

The focus of this session is on finds related to large entities and structures in urban contexts (e.g. moats, quay sites, ramparts, whole plots or even quarters, and industrial plants). Our aim is to discuss collection strategies, recording and documentation strategies. What is the potential of (so called) bulk finds? What kinds of special finds strategies are needed? We would also like to gather experiences of systematical metal detecting while excavating these sites. Should we develop on-site sorting and recording or settle for finds analyses during post-excavation? What is the need of on-site conservation? We also welcome discussions of the importance of finds when making interpretations, especially in situations where the excavated areas are filled with redeposited material, such as moats and harbourside land reclamations. What can we obtain from the results, and what will be missing? The focus is especially on the early modern era but papers based on medieval, especially late medieval sites are welcome too.

ABSTRACTS

1 URBAN EXCAVATIONS AND MUSEUM RESEARCH AS A MEAN FOR TRANSMEDIAL COMMUNICATION – PLANNING FOR THE NEW MEDIEVAL MUSEUM IN STOCKHOLM

Abstract author(s): Kjellberg, Joakim - Vidarv, Olle (Medieval Museum in Stockholm)

Abstract format: Oral

The Medieval Museum is the result of a spectacular excavation in 1979-1980 on Helgeandsholmen island. The excavations have been the single largest urban excavation so far in Stockholm, resulting in an on-site museum that opened in 1985 with some of the archaeological features preserved in situ. It is still one of the biggest assemblages of medieval artefacts in Sweden to be scientifically collected and registered, numbering more than 50 000 objects. Given the time, the excavations were of high quality but have hitherto not been fully published. A popular summary of the results and selected artefacts was published shortly after the excavation. This archaeological data is a great resource, but due to lack of funding to continually produce new research, one that still is waiting to be fully utilised.

Moving forward to present day the current museum will close in 2023 and move into a new venue in 2028-2029. The new museum and exhibitions will have a partly different objective, now seeking to be the starting point for exploring all of medieval Stockholm. Although this opens for including other and newer excavations, Helgeandsholmen is still one of the major resources. Over the coming years we plan to revisit the Helgeandsholmen material and recognise that research on this material still has a great potential for renewed perspectives in the new museum.

Without a physical museum the challenge is to make an ongoing archaeological research project a key part of the communication while developing the new museum and to maintain the relationship with our visitors. Through an integrated transmedial approach, using such tools as social media and digitisation, we aspire to find new ways of engaging with our audience. We will present the collection and seek to discuss the pitfalls and potentials, along with some initial ideas and concepts in this paper.

2 DEALING WITH ABUNDANCE- FINDS FROM THE EXCAVATIONS OF THE LATE MEDIEVAL OR EARLY MODERN TOWN OF NYA LÖDÖSE

Abstract author(s): Forsblom Ljungdahl, Veronica (The Archaeologists, National Historical Museums)

Abstract format: Oral

Large-scale excavations were carried out of the late medieval or early modern town of Nya Lödöse between the years 2013-2017. The area excavated included about one-fifth of the town's total area and revealed well preserved layers and structures from about 35 plots, church and cemetery.

Nya Lödöse was a small town situated in present day Gothenburg and existed between 1473 and 1624. The town was Sweden's only port connected to the western sea and had close trading connections with Danish, Dutch, German, Scottish and Flemish towns among others.

Because the town existed for a short period of about 150 years, and its close connections with other European trading hubs, makes it a perfect case for studying changes in material culture between the late medieval and the early modern period. The plots has also been excavated with a similar level of ambition, using contextual methodology, which makes it possible to compare and analyze differences in material culture between different plots and areas of the town.

This paper aims to present the finds process, how we managed to handle such a vast assemblage over many years of excavations. Challenges we faced along the way but also possibilities. How can we use the finds together with osteology and paleobotany as a tool for interpretation already during the process of excavation? What are the limitations and how have we dealt with the fact that even a large excavation like the Nya Lödöse project has its limitations when it comes to budget for conservation. What did we decide to prioritize and what did we not?

3 TWO LARGE GLASS FIND'S ASSEMBLAGES FROM A LATE MEDIEVAL OR EARLY MODERN SCANDINAVIAN TOWN

Abstract author(s): Haggren, Georg (University of Turku)

Abstract format: Oral

Nya Lödöse was a small Swedish medieval town which was founded in 1473 and deserted in the early 1620s. Located on the estuary of the River Götaälv it was Sweden's gate to the west, and a lively port with close connections to Dutch, Flemish, German and Scottish towns. It was also a predecessor of the later city of Gothenburg founded in 1621.

While the rest of the world was focused on the Great War, later known as the World War I, in 1915–1918 large scale excavations took place in Nya Lödöse. These early excavations resulted lots of finds, including about 800 glass fragments. In contrary to many other early excavations here the glass finds were collected and preserved for future research too. Even if the information of their contexts is far from accurate they offer an overview on vessel glass used by the towns people of Nya Lödöse.

In the 2010s new large scale excavations were made in a suburb of Gothenburg called Gamlestaden, i.e. the site of Nya Lödöse. During this project "Staden Nya Lödöse" dozens of plots were excavated by modern contextual methods. Similar to the excavations a century earlier, lots of glass was found. However, this time the stratigraphical context of each fragment is well known and it is possible to get an overview of the glass assemblage in each individual plot.

The aim of this paper is to discuss of two large assemblages from a single town. Here we have a chance to compare the potential of finds material from the same site but excavated by completely different methods. Together these two assemblages give us an overview over the role of the glass vessels, dining culture and trade's contacts in a small Northwest European town.

4 IN SEARCH OF LOST TIME - 50 YEARS OF LARGE-SCALE EXCAVATIONS IN GOTHENBURG

Abstract author(s): Wennberg, Tom (Museum of Gothenburg)

Abstract format: Oral

Large scale excavations in Gothenburg begun in 1975. While urban archaeology in other parts of Sweden focused on the medieval period the archaeology in Gothenburg focused on early modern times. This was partly due to that the founding date of Gothenburg was 1621.

These large-scale excavations yielded large amounts of finds. This paper will discuss the difference in collecting methods during this time period and the possibilities with older store material. Different materials have been treated different over this period and collecting strategies clearly varies over time.

The stores of the Museum of Gothenburg have large assemblages and though a lot of different types of finds in different materials the lion's share consists of ceramics. There are also almost only materials from the 17th and 18th century and only fragments from later periods.

This paper will also discuss what type of materials that are missing and how methods regarding large materials in large features could be applied in future excavations.

5 EARLY MODERN URBAN ARCHAEOLOGY FINDS FROM THE LARGEST EXCAVATION IN FINLAND

Abstract author(s): Uotila, Kari (Muuritutkimus Oy; University of Helsinki; University of Turku) - Helamaa, Maija (Muuritutkimus Oy)

Abstract format: Oral

Large-scale excavations were carried out in the current Market Square in Turku, SW Finland, in 2018–2022. The area was settled around mid-17th Century and destroyed in the Great Fire of Turku in 1827. By the 1830's, the area had been covered and turned in to a marketplace which was now under reconstruction. The excavations revealed well preserved layers and structures from about 20 different town plots inhabited by merchants, military officers, and craftsmen.

The main excavation area, covering about 1.5 hectares, produced over 3700 kg of finds material with pottery and glass forming the major find groups. The number of single sherds, pieces and objects rises above 200.000. The organic material, especially leather, but also wood and bone objects, were much better preserved than anticipated. All finds were collected in the field and handled (cleaned & catalogued) during the post-excavation process.

But even the large-scale excavation has limited budget. This especially is the case when we deal with materials which need to be conserved before entering the museum collections. Only selected finds of these materials were archived. This causes inequality between different finds and their future research. Decisions must be made, and they are not always easy.

This paper presents the finds processing during the Market Square excavation. How this vast material was handled. Also, how this experience affected and affects for future excavation projects in Turku and around Finland.

6 FROM THE MOATS OF COPENHAGEN

Abstract author(s): Simonsen, Rikke (Museum of Copenhagen)

Abstract format: Oral

Copenhagen, the capital of Denmark, has been surrounded by walls and moats since the Middle Ages. Over time, the city's boundaries have been moved several times and replaced by mighty ramparts, bastions, and deep moats. New parts of the city have risen on the filled moats. Over the years, the Museum of Copenhagen has excavated a number of times in the old moats, which were partly filled in with the rubbish of the Copenhageners.

In general, the humid environment of the moats has ensured very good preservation conditions for the artifacts. However, in some places the number of finds is overwhelming, while in others archaeologists find only a few objects. And why are hats, trousers and large pieces of pots and plates found in one part of the city, but only small fragments of fabric and pottery in another? This presentation will focus on the varied pattern of finds in Copenhagen's post-medieval filled-in moats across time and space, looking at the finds, the museum's strategies for the excavations and contemporary written sources.

7 ALL THE FINDS WERE THROWN AWAY...

Abstract author(s): Ravnholt, Gerd (Museum of Copenhagen)

Abstract format: Oral

In 2019/20 Museum of Copenhagen conducted a rescue excavation of an island in the city harbour, entirely constructed by land reclamation from 1696 and onwards. The excavation covered approximately 19.000m². With an estimated average depth of 3,5 m of land fill layers, more than 66.000m³ of soil, with the potential of containing artefacts, was removed.

A lot of finds were simply ignored during excavation, and a lot were discarded after a simple registration post-excavation. There are 534 individual records of finds, of which only 101 are kept (some records contain more than one artefact). This decision is controversial and did not pass without discussion.

The research potential of the finds was considered low; hence a very restricted collection strategy was chosen. The trial excavation revealed finds from over a very long timespan, with no possible way to determine origin.

Collection of finds was limited to sampling in bigbags, followed by sieving, with the aim of determining whether it was possible to distinguish between the top and the bottom deposits, and possibly find the harbour bed, with the potential of well-preserved medieval artefacts dropped from ships before the reclamation of the area.

With sampling and sieving a more complete assemblage was obtained. No finds were left behind because they were small, dirty, or looked boring.

Clay pipes were an exception from the restricted strategy, in that all pipes were collected. The pipes can be seen as a representation of the entire find assemblage showing the timespan, the preservation and the fragmentation. The clay pipes were subjected to further analysis to examine if it was possible to detect residues of opium or cannabis in the pipes. No cannabis or opium was detected, but a method for analysing the former contents of the pipes was developed.

8 OPPORTUNITIES, CHALLENGES AND PERSPECTIVES. MASS COLLECTIONS OF FINDS FROM ARCHAEOLOGICAL RESEARCH IN POMERELIAN TOWNS

Abstract author(s): Starski, Michal (Faculty of Archaeology University of Warsaw)

Abstract format: Oral

The paper aims to present the results of selected archaeological investigations in Pomerelian towns (Gdańsk Pomerania) and the related problem of elaborating and caring for mass collections of movable finds. The issues of methods of obtaining finds, conservation of monuments, and processing and storage of collections will be discussed. Examples from smaller and larger towns of the region (i. e. Gdańsk, Człuchów, Chojnice, Lębork, Puck, Skarszewy) will be contrasted to present differences in the approach to the elaboration of monuments. The paper will also discuss both collections from the early and late Middle Ages but, above all, modern and contemporary finds, which are definitely more numerous and often obtained from accidental contexts. On this basis, the problem of the suitability of the collections for research on material culture and the issue of storing finds will be discussed. The paper will be presented based on more than 20 years of experience in archaeological research in Pomeranian towns.

9 INTERDISCIPLINARY RESEARCH IN A LARGE-SCALE URBAN SITE: THE ANDALUSI NEIGHBORHOOD IN SAN ESTEBAN ARCHAEOLOGICAL SITE (MURCIA, SPAIN)

Abstract author(s): Hernández Robles, Alicia - Eiroa Rodríguez, Jorge A. (University of Murcia) - González Ballesteros, José Ángel - Celma Martínez, Mireia (ARHIS, University of Murcia) - Haber Uriarte, María (University of Murcia)

Abstract format: Oral

In 2009, an archaeological rescue intervention in the city center of Murcia (Spain) partly brought to light the medieval urbanism of the Arrixaca neighborhood, a suburb outside the city walls from the 11th and the 13th centuries, the most extensive medieval site discovered in Europe –about 10.000 sqm.

San Esteban Project (<https://sanesteban.um.es/>) aims to understand the daily life of this Andalusí suburb through an interdisciplinary research team coordinated by the University of Murcia in agreement with the City Council, where the specialists in Bioarchaeology, Archaeozoology, Archaeobotany, ORA, Paleoparasitology, DNA, isotope analysis, and the more traditional record (ceramics, glass, metals) provide an accurate recovery methodology to retrieve the whole materiality, both the visible and the invisible during the digging process.

This paper is to display the experiences, protocols, sampling, and results in thanks to the effort, and the most recent archaeological techniques. Specific areas of the site will be taken as an example (e.g. rooms, burials, pipes) to analyze the different sampling strategies carried out (hand-picking, random or specific sampling, water sieving, flotation samples, etc.), and how they have affected the types and amount of finds recovered.

In addition, the archaeological site provides the ideal training scenario for undergraduate and master's students, those who acquire the protocols and streamline sampling decision-making according to the research assumptions as a live accompaniment process.

The experience of the project since 2018 concludes as indispensable a diversified sampling and constantly evaluated from the data provided by each of the disciplines according to the procedures carried out. The continuous exploration of new research hypotheses and the constant incorporation of new disciplines have determined the indispensable on-site sorting and sample reserve for analysis to come in this case.

A. BEYOND JEWELRY: ORNAMENTS FROM THE MEDIEVAL CEMETERY OF PERMET, AS AN EXPRESSION OF CULTURAL IDENTITY

Abstract author(s): Meshini, Mariglen (IKTK - National Institute of Cultural Heritage, DSHA - Archaeological Service D) - Xhelili, Kiara (author) - Cako, Rigert (author) - Papathimiu, Edmond (author) - Porja, Arjol (author)

Abstract format: Poster

In 2021, the medieval cemetery of Përmet was identified during work for the “Urban integrated and development project of Berat-Përmet”, a project founded by the “Albanian Development Fund”.

The cemetery was positioned on the southern side of the Vjosa river, in urban area, which is known as the “New Neighborhood” of Përmet. Even though the Vjosa valley is known in the archaeological record for its medieval cemeteries, there was no indication of the existence of the recently discovered medieval burial ground.

The rescue excavation was organized in two equal sectors, and it enabled the identification of 25 graves. Both sectors had the same grave construction typology. The graves had a rectangular box shape, which usually narrowed at the end.

Inside the grave context we observed that half of the graves contained grave goods and half of them were not associated with any artifacts along with the human remains. The grave goods consisted mainly of objects associated directly with the body, such as necklaces, earrings, and rings.

The study of the archaeological materials, especially the earrings and rings, indicate that the cemetery dates to the 8th-9th centuries AD. This area of the Përmet cemetery is probably the earliest phase of its function as such. Based on the burial rite and grave goods, the cemetery can be dated to beyond the 9th century AD, and likely used until at least the 12th century.

The discovery of the medieval cemetery of Përmet provides important scientific data for the Early Middle Ages in the Albanian territory. It also unravels information about the cultural exchanges between societies from the 8th century to the Late Middle Ages.

THE SEDIMENT AS AN ARTEFACT: INTERPRETING HUMAN BEHAVIOUR AND ACTIVITIES THROUGH GEOARCHAEOLOGICAL ANALYSIS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Fernández-Palacios, Enrique - Dinckal, Ada (Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica “Antonio González”, Universidad de La Laguna; Departamento de Geografía e Historia, UDI Prehistoria, Arqueología e Historia Antigua, Facultad de Humanidades, Universidad de La Laguna) - Cooper, Aspen (Institute for Archaeological Sciences, University of Tübingen; Anthropology Department, University of Minnesota) - Marcazzan, Diana (Institute for Archaeological Sciences, University of Tübingen) - García-López, Zaira (CRETUS, EcoPast - GI-1553, Universidade de Santiago de Compostela)

Session format: Regular session

To obtain well-grounded interpretations of anthropogenic sediments as artefacts, recent geoarchaeological research calls for robust integration of different analytical methods exploring the archaeological context. These methods range from the geomorphological, geochemical, mineralogical, archaeometric and chronological methods at micro-, meso- and landscape scales.

This session explores the geoarchaeological approach to analysing sediments as artefacts. In addition to producing tools and refuse, humans produce, alter, and deposit sediments, acting as geological agents themselves. Thus, sediments can be viewed as unique artefacts which reflect past behaviours. This conception of archaeological sediments as artefacts has been previously proposed and is applied to a diversity of archaeological sedimentary features from different time periods and regions. Recent research highlights the benefit of integrating multi-scale geoarchaeological data with other related sources of behavioural information, such as data obtained through the technological, spatial, experimental, and archaeostratigraphic analysis of tools and refuse.

This session promotes a multiproxy, multiscale geoarchaeological analysis as a powerful tool investigating past human behavioural processes. The core theme is in the exploration of a wide variety of human activities and behaviours as they have been imprinted into the sediment itself. These processes need not be limited to a single time period or aspect of human behaviour but can reflect a wide variety of past human activities; such as the dynamics of human-environmental interaction, the socio-cultural pressures of class and gender, the development of pastoralism, the impact of colonialism, and how changing technologies can be reflected in the sediment.

ABSTRACTS

1 DR. STRANGEMUD; OR HOW I GOT A MICROSCOPE AND STOPPED THROWING AWAY MY DIRT

Abstract author(s): Cooper, Aspen (Anthropology Department, University of Minnesota; Institute for Archaeological Sciences, University of Tübingen) - Dinckal, Ada (Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica “Antonio González”, Universidad de La Laguna; Departamento de Geografía e Historia, UDI Prehistoria, Arqueología e Historia Antigua, Facultad de Humanidades, Universidad de La Laguna)

Abstract format: Oral

The integration of the Natural Sciences with Archaeology has enhanced our ability to study an invaluable index of human interaction. With the micro-contextual toolkit, we can now understand human activities through signatures imposed on the sedimentary matrix. The inherently destructive nature of an archaeological excavation destroys the sedimentary context and any information contained therein unless it is adequately recorded and sampled. This highlights an epistemological and ethical need to record and research as much of the sedimentary context as possible. Therefore, it becomes important that through the archaeological investigation, a geoarchaeologist can prioritize their resource and integrate it with other “extracted” data for a more holistic understanding of how humans actually interact in the temporal confines of that space.

In this presentation, we will explore the assortment of tools that archaeology now possesses to explore the sediment as an artifact of activity, while emphasizing the theoretical importance of having geoarchaeology as an essential collaborator in any archaeological investigation. We discuss observed pyrotechnology in the Middle Paleolithic of Montenegro and Spain to investigate the strength of these tools while exploring tangible human actions which have turned sediment into an artifact.

2 THE NEOLITHIC SITE OF QAZANCHI IN THE ZAGROS MOUNTAINS IN IRAN: A GEOARCHAEOLOGICAL APPROACH

Abstract author(s): Mylona, Pantelitsa (Department of Antiquities, Republic of Cyprus; MNHN- CNRS-UMR7209 Archéozoologie Archéobotanique : Sociétés, Pratiques, Environnements) - Khormali, Farhad (Gorgan University of Agricultural Sciences and Natural Resources) - Djamali, Morteza (IMBE - UMR Aix Marseille Université, CNRS, IRD, Avignon Université) - Davoudi, Hossein (Bioarchaeology Laboratory, Central Laboratory, University of Tehran) - Mashkour, Marjan (MNHN- CNRS-UMR7209 Archéozoologie Archéobotanique : Sociétés, Pratiques, Environnements; Bioarchaeology Laboratory, Central Laboratory, University of Tehran)

Abstract format: Oral

The Neolithic site of Qazanchi is located on Zagros Mountains in Iran. Archaeological excavations provided important information for understanding the Early Neolithic period of the area. Among different analytical approaches, a stratigraphy section was examined through soil micromorphology. The stratigraphic sections displayed several superimposed grey and brown ashy layers that raised questions related to the formation processes and the anthropogenic activities linked to those deposits. In order to answer these questions, a collaborative micromorphological study was designed. Micromorphological oriented blocks have been taken in 2019 from all the layers and analysed under optical microscope. The micromorphological approach consists of the identification of sedimentary facies based on microstructure, matrix and inclusions. The observation of thin sections showed that the stratigraphy was formed by hearth wastes: they are rich in dung and microcharcoals. The homogeneous type of deposits points to a same type of activities along the occupation. Biological activity indicated irregular deposit rhythm link to seasons and fluctuations of water table.

3 HAUNTED GROUND! THE IDENTIFICATION OF LARGE ANTHROPOGENIC GEOCHEMICAL ANOMALIES AND THEIR IMPLICATIONS FOR ARCHAEOLOGY

Abstract author(s): Pattillo, Kath - Doonan, Roger - Goodchild, Joel (Archaeological Research Services Ltd)

Abstract format: Oral

New ways of sensing the environment provide new ways of seeing the world. Recent innovations in portable analytical equipment and how it is deployed, i.e. geochemical survey and HH-pXRF, has meant that archaeological sites have been subjected to an unprecedented intensity of geochemical survey. While geochemical survey is now an established method for the prospection and characterisation of archaeological sites, including the verification of geophysical blank areas, the extensive use of the technique has highlighted the presence of significant geochemical anomalies that can, in some instances, extend across large areas. These structured anomalies are the results of past human practices and can be considered to be “signatures” of past practices. These signatures manifest as elemental patterns that have a defined spatial structure. The existence and extent of these signatures have only been fully realised in light of the extensive nature of geochemical survey when conducted by HH-pXRF, prior lab-based surveys often being undertaken at a coarse resolution and reliant on relatively few samples.

Using case studies from across the UK and overseas, this paper seeks to highlight the existence and character of these signatures and comment on their value. Issues surrounding their documentation and challenges regarding their future curation are also discussed.

4 NECROSOL TO APPROACH PAST FUNERARY PRACTICES AND SPACES

Abstract author(s): García-López, Zaira (Cretus, EcoPast - GI-1553, Universidade de Santiago de Compostela) - Martínez Cortizas, Antonio (Cretus, EcoPast - GI-1553, Universidade de Santiago de Compostela; Bolin Center for Climate Research, Stockholm University) - López-Costas, Olalla (Cretus, EcoPast - GI-1553, Archaeology, Faculdade de Xeografia e Historia, Universidade de Santiago de Compostela; Department of Archaeology and Classical Studies, Stockholm University)

Abstract format: Oral

Necropolises are important spaces of ancient societies. Their location and relationship with other structures is extremely informative for reconstructing the distribution of space and funerary practices. However, many times the memory of where they were located is lost or there are doubts about the funerary use or not of a given structure. When the memory of an inactive necropolis is lost an archaeological excavation can recover it through the discovery of structures or skeletons. In the absence of archeological artefacts, historical sources can help us to locate a cemetery in an area, but they can hardly provide an exact location.

The interaction between human remains and sediments starts right after burial, leading to bidirectional physico-chemical changes, and as a result the Necrosol (i.e., burial soil) is formed. Knowledge on the processes by which the burial soil is formed and the characteristics it acquires when interacting with the skeletal remains, can help to identify the Necrosol and thus establish and describe with certainty the burial areas. We provide here key information about the

Necrosol properties that help to determine the funerary use or not of an archaeological context, in the absence of skeletons or other more obvious artefacts. To reach this goal we describe the main biogeochemical properties and pedogenetic processes identified in three case studies of burial soils of the Iberian Peninsula. Despite the chronological and geographical distance between them, our results suggest that they share common processes that seem to be related to the decomposition of bodies and early bone diagenesis. Small differences are linked to soil parent material, but also to the type of burial: simple fossa, wood coffin, amphora burial, etc. In the future, Necrosol could be a tool to unveil the memory of present-day invisible necropolises and to describe the steps followed in the burial ritual.

5 SEDIMENTS AS (RITUAL) ARTEFACTS: A MICROSTRATIGRAPHIC APPROACH TO PROTOHISTORIC IBERIAN RITUAL SITES

Abstract author(s): Gutiérrez-Rodríguez, Mario - Rueda Galán, Carmen - Quiles Morales, Míriam (University of Jaén)

Abstract format: Oral

Geoarchaeological research carried out internationally in recent decades has shown how archaeological sediments, beyond being mere containers of the materiality of the past, are the result of human behaviour and can even be considered artefacts and part of the material culture. This approach has been developed, among others, in ritual sites from diverse chrono-cultural contexts, where the application of high-resolution analytical methods from Earth Sciences has allowed a better understanding of ritual behaviour. Thus, geoarchaeological analysis has proven to be useful in unravelling specific habits and actions within particular rituals, some of which were invisible at the macroscopic scale. Besides, this approach is especially relevant for unravelling the site formation processes and the many agencies involved in the genesis of the archaeological record. In this presentation, we focus on the archaeological analysis of Iberian Protohistoric societies, in a specific field of application: their places of worship. Our case studies cover from open-air ritual sites to urban and cave-sanctuaries, in a chronological frame from the 5th c. BC to the 1st c. AD. The high-resolution geoarchaeological methods applied range from archaeological soil micromorphology, and physical-chemical analyses, to FTIR and μ -XRF, following an integrated, multianalytical microstratigraphic approach. Specifically, our results have shed light on: 1) determining the impact of the ritual practices in terms of site formation processes in sanctuaries of diverse typologies by identifying specific organic and inorganic markers of human behaviour in archaeological sediments at microstratigraphic and molecular scales; 2) determining activity areas in Iberian sanctuaries; 3) identifying structured sedimentary deposits formed as a result of ritual behaviour; and 4) characterising the natural framework where the rituals took place through a palaeoenvironmental reconstruction. Altogether, and when combine with the rest of the material evidence, these new data provide a better understanding of ritual behaviour, Iberian sanctuaries and their spatial organisation.

6 MULTISCALE (GEO-)ARCHAEOLOGICAL INVESTIGATIONS AT TWO PREHISTORIC SETTLEMENT SITES IN THE UPLANDS OF NORTHERN BAVARIA, GERMANY

Abstract author(s): Kothieringer, Katja - Seregély, Timo (University of Bamberg)

Abstract format: Oral

In this paper, we present some results of an interdisciplinary, multi-year research project on prehistoric rural settlement and landscape dynamics in the uplands of northern Bavaria (Germany), a karst region largely considered unsuitable for ancient settlement, primarily because of its lack of water. While the first part of the project aimed at detecting settlement sites and sinks with sediments triggered by past human activities, we have recently focused on two plateau sites (Göräuer Anger, Weiden) to obtain fine chronologies and gain insights into the nature of past land use. This has been requiring a combined (geo-)archaeological and palaeoecological approach, including predictive modelling and geophysics prior to invasive fieldwork, corings and test pits, comprehensive dating (^{14}C and OSL), and further micro- and molecular-level analyses.

The two sites have in common that they show an approximate contemporaneous settlement continuity from the younger Middle Bronze Age to the Early LaTène period (1350 – 350 BCE). We found temporally matching colluvial deposits at expected sinks and footslope positions, with some exceptions worth discussing. At Weiden, we also see a notable medieval overprint of the site, which severely hampered the preservation and detection of older features and sediments. Some of the prehistoric deposits show traces of long-term water influence. Pending results from micromorphological and biomarker analysis, some of which will be presented at the conference, may support the hypothesis that they were water reservoirs. Palaeoecological analyses have shown that past land use activities must have had a strong influence on the woodland composition at certain times, as reflected in charcoals of pioneer trees and shrubs (e.g. ash, hazel, or Maloideae), which we interpret as post-clearing successional indicators that suggest an opening of the landscape from the younger Middle Bronze Age onwards.

HOW THE LANDSCAPE CAME TO BE: INVESTIGATING SEDIMENTS AS KEY ARTEFACTS FOR UNDERSTANDING LANDSCAPE EVOLUTION IN THE KREUTTAL MICROREGION

Abstract author(s): Jetzinger, Doris (Department of Prehistoric and Historical Archaeology, University of Vienna; HEAS Human Evolution and Archaeological Sciences Research Network, University of Vienna)

Abstract format: Oral

Sediments arguably constitute the largest known archive of past human activities in the world, offering a vast spectrum of information that may evade us when studying other sources. A complementary analysis of sediments is therefore crucial in many archaeological research areas to enhance our understanding of human actions and behaviour. This is especially true for the field of landscape archaeology where the majority of the available study material consists of sediments. The research into and analysis of sediments is essential for reconstructing landscape evolution as well as detecting anthropogenic and natural formation processes that generate changes in the landscape.

An effort towards studying sediments as the main artefacts in landscape archaeological research is currently being undertaken in the Kreuttal microregion in Lower Austria. The area is characterised by evidence of a strong presence of human activity from at least the Middle Neolithic (ca. 4800 BCE) onwards. Implementing a diachronic approach, an archaeological landscape biography of the microregion is being created, reconstructing the area's landscape history and the formation processes involved in the landscape's evolution. The sedimentary archives constitute the main body of studied research material. A multi-method approach combining targeted coring, test pitting, and large-scale geoarchaeological prospection is applied for their analysis. Sedimentary analysis is complemented by the interpretation of remote sensing and archival map data as well as excavation results. The research project offers insights into the stratigraphic sequences, depositional changes, and subsurface formation processes in the Kreuttal microregion. Data generated in the course of the project shed a light on past human activities in the research area and on peoples' use of and adaptation to their surroundings, as well as their short- and long-term impact on the landscape.

DUNG ASH OR WOOD ASH? LOOKING BACK INTO MICROARCHAEOLOGICAL APPROACHES TO DETERMINE ASH COMPOSITION IN FUMIER DEPOSITS

Abstract author(s): Fernández-Palacios, Enrique (Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica "Antonio González", Universidad de La Laguna; Departamento de Geografía e Historia, Facultad de Humanidades, Universidad de La Laguna) - Gur-Arieh, Shira (Institut für Vor- und Frühgeschichtliche Archäologie und Provinzialrömische Archäologie, Ludwig-Maximilians-Universität) - Castilla-Beltrán, Alvaro (Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica "Antonio González", Universidad de La Laguna; Departamento de Geografía e Historia, Facultad de Humanidades, Universidad de La Laguna) - Jambrina-Enríquez, Margarita (Departamento de Biología Animal, Edafología y Geología, Facultad de Ciencias, Universidad de La Laguna; Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica "Antonio González", Universidad de La Laguna) - Friesem, David (Department of Maritime Civilizations, School of Archaeology and Maritime Cultures, University of Haifa; Haifa Center for Mediterranean History, University of Haifa) - Mallol, Carolina (Archaeological Micromorphology and Biomarkers Laboratory - AMBI Lab, Instituto Universitario de Bio-Orgánica "Antonio González", Universidad de La Laguna; Departamento de Geografía e Historia, Facultad de Humanidades, Universidad de La Laguna)

Abstract format: Oral

Rockshelters and caves are commonly used by prehistoric shepherds as shelter for their livestock. When the deposited dung and the plant material used as fuel, fodder or bedding were periodically burned by shepherds as a way to reuse the shelter over time, the stratigraphic result is a fumier deposit. Fumiers are characterized by a series of facies that have been documented macro- and microscopically in different settings and time periods. From bottom to top, these facies correspond to: brown layers or low thermally altered dung; black layers or carbonised material; and grey/white layers or ashy layers. The latter usually represents the end of the stabling episode. Determining the composition of the ashy layer is key to understand how the excrements were burned, to explore use of plant resources, and to address residue management practices among prehistoric pastoralist communities. In this presentation, we review micro- and geoarchaeological methods that have been used to study ash layers in fumiers. These proxies include soil micromorphology, and bulk analyses of faecal spherulites, ash pseudomorphs and phytoliths. Furthermore, we present new data coming from two prehispanic fumier sequences in the island of La Palma (Canary Islands).

9 BURNED OR JUST DARK SOIL? MAGNETIC PROPERTIES AS INDICATORS OF PEDOGENESIS AND PYROGENESIS AT THE UPPER PALEOLITHIC SITE KOSTENKI 14

Abstract author(s): Kurgaeva, Anastasiia (Cluster of Excellence ROOTS, Christian-Albrechts-Universität zu Kiel) - Sedov, Sergey - Moreno-Roso, Sol (Instituto de Geología, Universidad Nacional Autónoma de México) - Barceinas Cruz, Hermenegildo - Ortega Guerrero, Beatriz (Instituto de Geofísica, Universidad Nacional Autónoma de México) - Sinitsyn, Andrey (-) - Eckmeier, Eileen (Cluster of Excellence ROOTS, Christian-Albrechts-Universität zu Kiel; Institute for Ecosystem Research, Christian-Albrechts-Universität zu Kiel)

Abstract format: Oral

At Palaeolithic sites an issue of distinguishing anthropogenic and natural signals often arises. Within a cultural layer, the most prominent anthropogenic indicator is pyrogenesis, while the natural processes are represented by pedogenesis, namely humus accumulation. Pyrogenesis and pedogenesis are nearly impossible to differentiate within topsoil: both are characterised by dark colour, dispersed organic matter, and high values of magnetic susceptibility. This is exactly the challenge that we faced at the Upper Palaeolithic site of Kostenki 14. At this site, we addressed this issue by analysing the magnetic parameters based on the method suggested by Oldfield and Crowther (2007), which was accompanied by micromorphological observations. Even though both processes result in significant magnetic enhancement, it was experimentally shown that pyrogenesis forms smaller magnetic particles indicated by the calculated quotients in comparison to pedogenesis. Based on the parameters of the original experiment, this method distinguishes the signal of an intense fire event from a fire of moderate/low intensity as well as the absence of burning.

Most of the humic samples were shown to be of a pedogenic nature, but two samples (a Paleolithic hearth sample and a sample from paleosol IIc) had features of intensely burnt material. Intense burning is more typical for a human-controlled hearth than for a large-scale fire. A large-scale fire, both natural and human-induced, rarely results in intensely burnt lenses of substrate in the forested area, while these lenses are nearly improbable in the open landscape. The difference in the typical intensity of large-scale and local-scale human-controlled fire events and micromorphological observations of microartefacts in close proximity of the intensely burnt lens allowed for suggesting that the magnetic properties of the burnt sample were the result of a human-controlled fire event, i.e., a hearth. However, the effect of a large-scale fire could not be entirely rejected.

10 SLAVERY, COLONIALISM, AND ENVIRONMENTAL CHANGES: THE SADO (PORTUGAL) AND CACHEU (GUINEA-BISSAU) ESTUARIES BETWEEN THE 15TH-20TH CENTURIES

Abstract author(s): Costa, Ana Maria (Laboratório de Arqueociências - LARC - DGPC; IDL - Instituto Dom Luiz, Faculdade de Ciências, Universidade de Lisboa; CIBIO - Centro de Investigação em Biodiversidade e Recursos Genéticos | InBIO Laboratório Associado | BIOPOLIS - Programme in genomics, biodiversity and land planning) - Freitas, Maria da Conceição (IDL - Instituto Dom Luiz, Faculdade de Ciências, Universidade de Lisboa; Departamento de Geologia, Faculdade de Ciências, Universidade de Lisboa) - Gomes Coelho, Rui (UNIARQ, Centro de Arqueologia, Faculdade de Letras, Universidade de Lisboa; Archaeology department, Durham University)

Abstract format: Oral

Between the 15th and the 19th centuries, more than 12 million persons were enslaved, forced to leave their homelands and sent across the Atlantic to Europe and the Americas. The environmental conditions of estuarine areas across the Atlantic world were significantly affected by forced displacement or the development of plantation economies, and shaped throughout these processes. This paper focuses on the environmental changes that occurred along the margins of the Cacheu (Guinea-Bissau) and the Sado (Portugal) estuaries during the last 500 years. While Cacheu was a prominent port in the trade of enslaved Africans, the Sado basin hosted communities of African-descent that were likely responsible for the introduction of rice crops in this part of Europe.

To accomplish our aim, we collected five long sediment cores from the studied areas: three on the left margin of Cacheu's estuary, near rice paddies cultivated by people from the eponymous town or in intertidal areas with development of mangrove; two in the alluvial plain of the Sado estuary, between 50 and 65 km upriver, an area that is still known for rice production.

Sediments will be analysed for different environmental proxies (texture, organic matter and calcium carbonate content, and organic matter typology using organic chemistry approaches) and, particularly for evidence of rice (characterisation of macro plant remains and pollen, among others).

Preliminary data from the Sado cores already provide indications of rice production prior to the 18th century. New data is being produced to enlighten the paper of enslaved people and their descendants in the morphology and environmental conditions of African and European estuarine areas.

SEDIMENTARY ADNA SAMPLING AND SEQUENCING: DEVELOPING PROTOCOLS FOR USE IN NORWEGIAN ARCHAEOLOGICAL SITES

Abstract author(s): Breivik, Heidi Mjelva- Martin, Sarah (NTNU University Museum, Department of Natural History)

Abstract format: Oral

The Norwegian Stone Age spans from c. 9500-1800 BC. Although Stone Age settlement remains are not visible above ground, thousands of settlements are known among archaeologists throughout the country, due to systematic surveys and rescue excavations. The settlements are commonly recognized by aggregations of chipped flint or other lithic material, and occasionally fireplaces and/or subtle dwelling remains. Organic remains, predominantly plant and animal, however, are scarcely found due to poor preservation conditions. In recent years it has been shown that sediments can contain ancient biomolecules, including DNA. Owing to recent advances in sequencing technology and genetics techniques, one small sediment sample can yield a broad snapshot of a past ecosystem. Such sedimentary ancient DNA (sedaDNA) analyses allow us to identify species that were present at the archaeological site, information that would otherwise remain elusive. For instance, identification of animal species could provide information about food staples, hunting strategies and mobility patterns related to annual cycles. Similarly, plant species identification can provide useful knowledge on how they played an integral part in human life, as fuel, medicine, food and other uses.

Environmental conditions vary geographically and temporally, thus sedaDNA quality will differ in archaeological sites from different regions. Therefore, there is a need to systematically survey the potential and feasibility for sedaDNA in archaeological contexts. We aim to do systematic sampling for sedaDNA from archaeological sites in Central Norway, and test the quality of the DNA we obtain. This will also involve the development of laboratory protocols for sedaDNA extraction, amplification and library preparation for next-generation sequencing (NGS).

Our project is in its very beginning, and we present some preliminary studies and ideas how to approach archaeological Stone Age sites with molecular methods.

A. EXPLORING PAST BIODIVERSITY AT ARCHAEOLOGICAL SITES FROM SCOTLAND USING ENVIRONMENTAL ANCIENT DNA

Abstract author(s): Allan-Jones, Amy (School of Geosciences, University of Aberdeen) - Girdland Flink, Linus (School of Geosciences, University of Aberdeen; School of Biological and Environmental Sciences, Liverpool John Moores University)

Abstract format: Poster

Sedimentary ancient DNA (sedaDNA) has become a valuable tool to archaeologists in recent years, with sediments yielding high quality DNA from sheltered, relatively undisturbed contexts such as caves and lakebeds. However, very little research has focussed on sedimentary samples from open-air archaeological sites due to their unsheltered nature, and the expectation that these conditions will negatively affect DNA preservation and contamination. This PhD project tests these assumptions through the extraction, sequencing, and analysis of ancient DNA from soil samples retrieved from archaeological sites across Scotland. The focus of this research is to interpret past local biodiversity, and how animal and plant DNA may have accumulated at archaeological sites due to anthropogenic activity, thereby providing a fine-scale, site specific understanding of human-environment interactions. In combination with other environmental proxies such as palynology, aDNA will provide environmental context to archaeologists seeking to understand past human activity and impact on their immediate surrounding landscape.

560 INVESTIGATING PAST HUMAN MOBILITIES THROUGH NATURAL RESOURCES EXPLOITATION: LATEST RESULTS AND DEVELOPMENTS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Orange, Marie (Université de Bordeaux / Archéosciences Bordeaux UMR 6034; Archéorient UMR 5133; University of New England) - Vautrin, Adeline (Muséum National d'Histoire Naturelle) - Bellat, Mathias (CRC 170 ResourceCultures, University of Tübingen)

Session format: Regular session

The study of spatial mobility, a central component of human behaviour, has recently gained a lot of interest within the archaeological community with the rise of isotopes and trace elements ratio analyses, but also and especially with the development of new methods in genetics research for the study of ancient DNA. Whilst this approach indubitably provides the archaeological community with invaluable information on population movements such as large-scale migrations, not only does it rely on the availability of well-preserved human remains – which can be problematic in

numerous archaeological contexts, but its resolution can also be limited to larger scales. Considering this, what other approaches based on more ubiquitous remains can help us recover patterns of human mobility? And how can we best leverage the information drawn from these materials to study mobility at a local, regional, or interregional scale?

This session will welcome oral and poster communications presenting the results from research projects focusing on the investigation of past human mobility through the reconstruction of the exploitation patterns of natural resources – whether they are inorganic (clay, rocks, metals, etc.) or organic (bitumen, pasturelands, etc.), depending on the study methods/proxy/multi-proxy: destructive or non-destructive (trace element ratios, isotopes ratios, geochemical sourcing, etc.). The aim of the session is to showcase the latest research on the topic as well as to generate a discussion around the different approaches in use nowadays. Study cases, methodological topics, and contributions on any geographical and chronological frameworks are welcome.

ABSTRACTS

1 INVESTIGATING AGROPASTORAL MOBILITIES IN THE SOUTH CAUCASUS THROUGH CARBONATE ISOTOPES ANALYSIS OF DOMESTIC BOVIDS (CHALCOLITHIC AND EARLY BRONZE AGE)

Abstract author(s): Vautrin, Adeline (AASPE UMR 7209, Muséum national d'Histoire naturelle) - Bosch, Delphine (Géosciences Montpellier UMR 34095, Université Montpellier II) - Chauvel, Catherine (Université de Paris, Institut de Physique du Globe de Paris,) - Fiorillo, Denis (AASPE UMR 7209, Muséum national d'Histoire naturelle) - Bruguier, Olivier (Géosciences Montpellier UMR 34095, Université Montpellier II) - Gutiérrez, Pamela (Université de Paris, Institut de Physique du Globe de Paris) - Jansen, Moritz (Deutsches Bergbau-Museum) - Stöllner, Thomas (Deutsches Bergbau-Museum, Bochum; Ruhr-Universität) - Mashkour, Marjan (AASPE UMR 7209, Muséum national d'Histoire naturelle; University of Tehran) - Berthon, Rémi (AASPE UMR 7209, Muséum national d'Histoire naturelle)

Abstract format: Oral

In the South Caucasus, a mountainous region with a rich tradition of cattle and caprines breeding, breeders employ a variety of strategies for raising their herds. While some practice transhumance moving their herds between high and low elevations depending on the seasons, others remain in either the mountains or the plains throughout the year. However, the challenges of winter in the mountains (herding and access to pastures) raise questions about winter occupations at high altitude in prehistoric times. From an archaeological perspective, the mountains appear to have been utilized as summer pastures by herders from the Neolithic until the establishment of the first village settlements in the Early Bronze Age. To better understand the occupation of territories by these agropastoral societies during the Chalcolithic and Early Bronze Age, this study will analyze faunal remains and oxygen ($\delta^{18}\text{O}$), carbon ($\delta^{13}\text{C}$), and strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) isotopes recorded in the dental enamel (carbonates) of domestic bovids from Georgian sites at different elevations. This cross-disciplinary approach will shed light on the seasonal occupation of the site, mobility, frequency, and the diet of the herds of these societies and provide a more complete picture of their relationship with the South Caucasus environments.

2 CROSSING HINTERLANDS? ISOTOPIC AND ZOOARCHAEOLOGICAL EVIDENCE FOR ENVIRONMENTAL EXPLOITATION AND MOBILITY IN ARCHAIC ITALY

Abstract author(s): Trentacoste, Angela (University of Kiel; University of Oxford) - Stoddart, Simon (University of Cambridge) - Marzullo, Matilde (University of Milan) - Curci, Antonio (University of Bologna) - Bizzarri, Claudio (Parco archeologico ed ambientale dell'Orvietano) - Bagnasco Gianni, Giovanna (University of Milan) - Govi, Elisabetta (University of Bologna) - Makarewicz, Cheryl (University of Kiel)

Abstract format: Oral

Increased plant and animal production was essential for the development and expansion of towns and cities in first-millennium BC Italy. Yet, archaeological research has only begun to explore the impact that these settlements had on rural production. Consequently, little is known about how some of Western Europe's earliest cities marshalled the resources needed to support urban life. In the diverse cultural and environmental landscape of protohistoric Italy, many strategies were likely employed, shaped by differences in connectivity and mobility regimes, land use, economic focus, and social organisation.

This talk presents new results from UrbanHerds, a Humboldt Foundation-funded research project investigating urban supply and environmental exploitation in Archaic Italian cities (c. 600–400 BC). This talk compares isotopic and zooarchaeological evidence for pastoral strategies across a suite of Archaic central Italian urban sites, in order to explore the types of environments exploited and the role of mobility (e.g. transhumance): the tessellated landscape of central Italy offered a diverse array of eco-zones that could be exploited for animal production, but only if urban

centres did not curtail access to their hinterlands through heightened territorial control. In this context, a better understanding of pastoral strategies provides new insight into human use of and movement through urban hinterlands.

3 NATURAL RESOURCES AND LAND-USE IN TRANSYLVANIA DURING IRON AGE. THE IMPACT OF HUMAN MOBILITY

Abstract author(s): Rustoiu, Aurel (Institute of Archaeology and History of Arts Romanian Academy Cluj-Napoca)

Abstract format: Oral

In terms of landscape, Transylvania is part of a larger area known as the eastern Carpathian Basin. The Transylvanian plateau is characterised by the presence of important mineral resources. Several deposits of rock salt spread out close to the surface and surround the plateau, being accompanied by many salty springs. The resources of non-ferrous ores were also important. The western Carpathians contain rich deposits of complex ore (copper, silver and gold). The Latin name of the region, Transylvania, means the land over the forests. Accordingly, timber was another important resource, being transported from Transylvania to the lowlands of the Great Hungarian Plain on the rivers.

The characteristic landscape, as well as the geographic distribution of natural resources, influenced the nature of human habitation, the social structure of the local communities and the strategies of control and distribution of these resources. The Great Hungarian Plain and the Transylvanian plateau were continuously connected and inter-dependent. On the other hand, communities from the northern Pontic steppes or those from the northern Balkans were sometimes also attracted by the Transylvanian riches. As a consequence, the archaeologists are able to observe numerous connections with the areas outside the Carpathians range. These included long-distance cultural exchanges often mediated by the mobility of certain social groups.

Therefore, the paper is going to discuss the manner in which human mobility influenced the strategies of exploitation of natural resources and transformation of the landscape throughout the Early and Late Iron Age, based on the analysis of the economic, social and ritual practices of different communities. The analysis is based on a range of archaeological, aero-photographic, archaeozoological, anthropological and palynological data.

This work is supported by the grant "Lived lands", CNCS - UEFISCDI, project number PN-III-P4-ID-PCE-2020-0566.

4 LITHIC SOURCING IN THE NORWEGIAN MESOLITHIC - PRESENTING RESEARCH HISTORY AND AN ONGOING PHD-PROJECT AT NTNU, NORWAY

Abstract author(s): Spjelkavik, Skule (NTNU University Museum, Trondheim)

Abstract format: Oral

In my presentation I wish to present a newly initiated PhD-project at the University Museum of the Norwegian University of Science and Technology (NTNU) in Norway. The project revolves around middle to late Mesolithic (8000-4000 cal. BC) mobility patterns and ecological adaptations in Central Norway, focusing on lithic raw materials and possible provenance areas. As the project is in its initial phase, the current focus is on reviewing relevant literature, data collection and research design, but some preliminary observations will be covered in the paper.

As a starting point for discussing mobility patterns and increasing regionalization in the study area, a closer examination of selected non-flint lithic artefacts, such as chubby adzes, bifacial axes and chisels, will be conducted through geochemical analysis using pXRF. The dispersal of certain lithic raw materials is often seen as a proxy for mobility and social boundaries, and so this study will attempt to establish a foundation for further explorations of landscape-embedded practices and social interactions in the Norwegian Mesolithic. A similar study has recently been conducted on Mesolithic greenstone adzes from Rogaland, in Southwestern Norway. The results from this study will be of importance for future analyses and we are hopefully approaching the possibility of establishing reference databases for inter-regional comparisons of non-flint lithic raw materials in Norway. In this paper I wish to present a short review of previously conducted lithic sourcing studies in Norwegian Stone Age research, particularly the Mesolithic, source critical issues and an outline of my own research project.

5 THE ART OF ADAPTING: INVESTIGATING RESOURCE EXPLOITATION AND PALEOLITHIC HUMAN MOBILITIES IN THE NORTH-CENTRAL CAUCASUS

Abstract author(s): Doronicheva, Ekaterina (-)

Abstract format: Oral

The study of past human mobility has received increasing attention in the course of recent studies dating from the Paleolithic to the Neolithic and beyond and the rise of new analyses, attracted for these researches.

I would like to present out latest results of trace element analyses and isotopes application to the study of mobility and adaptations, dating from the Late Pleistocene to the early Holocene, in changing environments in the North-Central Caucasus.

Our preliminary research shows how dependent to the natural environment and at the same time, how highly adaptive were Paleolithic collectives. This is reflected in complex strategies for mobility and resource extraction, raw material strategies (e.g., various lithic raw materials, bitumen, etc.), and the organization of various types of settlements.

6 RETRACING PAST POPULATIONS MOBILITY THROUGH THE LENS OF OBSIDIAN: SOME INSIGHTS FROM THE SOUTHERN CAUCASUS DURING LATE PREHISTORY

Abstract author(s): Orange, Marie (Université de Bordeaux / Archéosciences Bordeaux UMR 6034; Department of Archaeology, Classics and History, School of Humanities, Arts and Social Sciences, University of New England; Archéorient—Environnements et Sociétés de l’Orient Ancien, CNRS UMR 5133, Maison de l’Orient et de la Méditerranée)

Abstract format: Oral

In the Southern Caucasus, mobile pastoralist groups have long been seen as key actors in the diffusion of obsidian, which they would have acquired and circulated over short to long distances, depending on their seasonal movements to and from the summer pastures. Uncovering the obsidian procurement and exploitation strategies of these groups is thus critical to reconstruct the regional and supra-regional obsidian networks between the Chalcolithic and the Early Bronze Age and to provide key insights into the role of mobility as a vector for socio-cultural and economic change on a larger scale.

Obsidian is a powerful proxy to study prehistoric trade and exchange networks as well as human mobility patterns: each obsidian source has indeed a unique chemical fingerprint, which allows us to trace the origin of obsidian artefacts found on archaeological sites. However, inferring past human mobility patterns from obsidian sourcing studies is not without its limitations. While knowing the source of an obsidian artefact found on a site informs us on its own trajectory, it does not necessarily reflect the movements of the population that frequented this site: depending on the adopted procurement strategy (i.e., direct or indirect), one or several interactions may have been needed to acquire it. Furthermore, although we can match an artefact’s geochemical fingerprint to that of a specific obsidian source, that origin may represent a completely different reality on the field, where obsidian blocks can be transported over long distances from their point of origin through natural processes (gravity, water), and therefore be available at lower altitudes, easier to access.

In this communication, I propose to review how obsidian analyses can be used to deepen our understanding of prehistoric population mobilities but also to illustrate through recent research some of the pitfalls and limitations of these studies.

7 METABASITE FROM THE JIZERA MOUNTAINS AS IMPORTANT PLAYER DURING EARLY NEOLITHIC IN CENTRAL EUROPE AND BEYOND

Abstract author(s): Trampota, Frantisek - Burgert, Pavel (Institute of Archaeology of the Czech Academy of Sciences) - Kachlík, Václav (Institute of Geology and Palaeontology, Faculty of Science, Charles University) - Šída, Petr (Department of Archaeology, University of Hradec Králové) - Přichystal, Antonín (Department of Geological Sciences, Faculty of Science, Masaryk University)

Abstract format: Oral

Early Neolithic populations reached central Europe in the form of gradual migration from the Balkans and Anatolia. While some social and technological phenomena have a southeastern origin, others only develop in the context of the beginnings of the Neolithic in Central Europe. These are long wooden houses, and the building is connected with polished stone tools intended for processing wood. These were mostly made of metabasite originally from the Jizera Mountains. The source of metabasite, which was rarely used already in the Mesolithic, became a central territory of several hundred kilometers and its distribution reached most of the populated regions in Central Europe, which is an important factor for understanding the social structure of Early Neolithic populations. The paper focuses on the current state of knowledge about the distribution of Jizera Mountains-type metabasite, on three levels. The first areas are the mining areas themselves which are also related to the primary processing of semi-finished products. The second area is the wider region around the Jizera Mountains, in which there are hoards of ground tools or extremely large artefacts. The third level is the supra-regional distribution on a European scale.

UNDERSTANDING THE DEVELOPMENT AND EXPANSION OF RESOURCE USES AND ACCESS THROUGH TIME WITH THE RESOURCECULTURES CONCEPT APPLIED IN TWO STUDY-CASES

Abstract author(s): Bellat, Mathias (CRC 1070 ResourceCultures; Department of Geosciences, Chair of Soil Science and Geomorphology) - Litzenberg, Ria - Rebentisch, Annika - Floss, Harald - Conard, Nicholas (CRC 1070 ResourceCultures; Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters Abteilung für Ältere Urgeschichte und Quartärökologie) - Scholten, Thomas (CRC 1070 ResourcesCultures; Department of Geosciences, Chair of Soil Science and Geomorphology; DFG Cluster of Excellence “Machine Learning: New Perspectives for Science”)

Abstract format: Oral

Anthropologists or archaeologists try to grasp the complexity and organization of past societies via many tools or strategies. They can build models or construct tools, like “chaîne opératoire”, to understand how resources are used and where they come from. However, it can be challenging to follow the implication of every parameter of dense systems when tackling old civilizations and group lifestyles or ways of life. Indeed, many clues are missing due to remote time study or misinterpretation of old social systems and cultural habits.

Therefore, the CRC 1070 project developed the concept of “ResoureCultures”, a powerful tool that helps divide archaeological or anthropological study-case into more comprehensive categories and sub-categories to understand the complexity of the systems. This presentation aims to detail this new concept and its specificities, such as ResourceAsemblage or ResourceComplex, with two study cases. The first is on the Neolithic architectural and construction techniques in the Southern Caucasus (Mentesh Tepe, Azerbaijan), and the second is the study of Upper Paleolithic art in two different regions, Swabian Jura and Eastern France.

We will treat the issue of provenance of the material and their transformation in which context people use them. After this, we will discuss the interpretation we can draw from this observation on past societies’ organization, mobilities or lifestyle.

RESPONSIBLE “SITE” SEEING: A DISCUSSION ABOUT SUSTAINABLE ARCHAEOLOGICAL TOURISM THAT ENHANCES THE VISITORS’ EXPERIENCE WHILE MINIMIZING THE NEGATIVE IMPACTS OF VISITATION [HERITAGE AND TOURISM COMMUNITY]

Session theme: 3. Heritage Narratives and Representations

Session organisers: Thomas, Ben (Society of Architectural Historians) - Fonseca, Sofia (Teiduma, Consultancy on Heritage and Culture; German Archaeological Institute)

Session format: Discussion session

Join us for a roundtable discussion on archaeological tourism, sponsored by the Community Integrating the Management of Archaeological Heritage and Tourism.

Archaeological tourism includes the management and presentation of archaeological sites and is concerned both with the visitor’s experience and with the impact of tourism on sites. As heritage tourism increases in the coming years, it is essential to consider tourism’s impact on archaeological sites. The roundtable will examine several critical issues, including but not limited to, preparing sites for increased tourism; addressing visitors’ desire for “meaningful” interactions and “authentic” experiences; creating presentations that address the needs of diverse groups of visitors; and evaluating people’s experiences and their learning. We will also explore the role of technologies like virtual and augmented reality in the presentation and interpretation of sites.

Just as importantly, we will consider how visitors’ experiences can be enhanced while minimizing negative impacts on the site. How do we assess the factors that affect archaeological sites and put heritage at risk? Are archaeologists and site managers aware of the Sustainable Development Goals and do their tourism strategies integrate these goals? How do we educate and raise public awareness of the impact of factors like climate change on archaeological sites and of the role the public can play in mitigating negative impacts on sites? It is essential to get archaeologists, site managers, and tourists to participate in actions that promote sustainable tourism.

We invite professionals connected to the topic worldwide, including archaeologists, site managers, museum professionals, tourism professionals, and heritage educators, to participate in the discussion and provide examples, ideas, and questions to enrich the conversation. Collectively, we can ensure that archaeological tourism contributes to the preservation and sustainable management of archaeological sites.

1 DEVELOPING CLIMATE VULNERABILITY ASSESSMENTS FOR CULTURAL WORLD HERITAGE PROPERTIES

Abstract author(s): Davies, Mairi (HES Historic Environment Scotland) - Jones, Rebecca (Heriot-Watt University) - Hyslop, Ewan (Historic Environment Scotland) - Megarry, William (Queen's University Belfast) - Day, Jon - Heron, Scott (James Cook University)

Abstract format: Oral

UNESCO recognises that the continued preservation of World Heritage (WH) properties necessitates understanding current and future climate change impacts and developing suitable adaptation strategies. ICOMOS has highlighted the need to promote open access tools and approaches to vulnerability assessment.

The Climate Vulnerability Index (CVI) was first developed to assess vulnerability of natural WH properties. A pilot to evaluate transferability to cultural WH properties was hosted by Historic Environment Scotland (HES) at the Heart of Neolithic Orkney. Following this successful pilot, HES made a commitment to rolling out CVI assessment to Scotland's remaining five WH properties.

HES obtained funding to develop more CVI applications starting with the Old and New Towns of Edinburgh (ONTE). In response to the ongoing pandemic, CVI workshops for ONTE and Frontiers of the Roman Empire: Antonine Wall took place virtually, with St Kilda being delivered as a hybrid.

CVI provides a methodology to assess climate risk and vulnerability at all types of WH; it is rapid, systematic, repeatable and flexible. Crucially, the CVI assesses both the vulnerability of the WH property's key values and hence its Outstanding Universal Value, and its community vulnerability, as well as its adaptive capacity. This allows an assessment of the economic, social and cultural impacts of a changing climate on a WH property.

We will report on the CVI results for the first four WH properties and discuss how we propose to mainstream the results in the on-going adaptive management of the sites. We will also discuss CVI Africa, a collaborative project, consisting of capacity building and training for African heritage professionals and CVI workshops at the WH properties the Sukur Cultural Landscape, Nigeria and the Ruins of Kilwa Kisiwani and the Ruins of Songo Mnara, Tanzania. This project focused on testing CVI's utility and long-term value in an African context.

2 CREATING CLIMATE RESISTANT AND SUSTAINABLE PRESENTATION OF ARCHAEOLOGICAL SITES

Abstract author(s): Lukacevic, Marijana (Regional Development Coordinator of Pozega-Slavonia County) - Jozic, Antonija (Prefect of Pozega Slavonia County)

Abstract format: Oral

The European Commission has adopted a set of proposals to make the EU's climate, energy, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. The more tourism turns to sustainability in its entirety and the application of green building, principles of planning, designing, management, etc., will be in the function of man and nature. The EU Taxonomy is one of the tools that can be used to significantly contribute to the sustainability of the investment project and the sustainability of space and society as a whole. This presentation will present the infrastructural project of the Interpretation Center of Hallstatt Culture. The main goal of the project "The Interpretation Center of the Hallstatt Culture" is to develop a touristic undeveloped area, creating sustainable archaeological tourism resistant to climate change. But, what does climate resistance of a building and presented area mean? How to achieve and keep it? The project "The Interpretation Center Of Hallstatt Culture" has all the predispositions to improve the tourist offer of the Pozega Slavonia County. Furthermore, the project will improve the economic value of the narrow and wider location. Supporting the idea of green and digital transition while preserving cultural heritage and nature, it will contribute to increasing of employment and serve as an example of good practice in the development of continental tourism in Croatia. The project follows the instructions of the DNSH principle to implement the minimum criteria and fulfill six environmental goals and several UN Sustainable Development Goals. However, in order to make the project Interpretation center of Hallstatt Culture" sustainable it is necessary to apply the principles of sustainability during planning, designing, implementation, and during the management of the building, which requires an interdisciplinary approach to the project.

3 ICOMOS INTERNATIONAL CHARTER FOR CULTURAL HERITAGE TOURISM (2022)

Abstract author(s): Gowen Larsen, Margaret (University College Dublin; ICOMOS ICTC; ICOMOS ICAHM)

Abstract format: Oral

In November 2022 the ICOMOS International Charter for Cultural Heritage Tourism was adopted by the ICOMOS Annual General Assembly in Bangkok. The newly adopted charter, presented by the International Scientific Committee on Cultural Tourism (ICTC) is not a revision of its 1999 Charter. A decision was taken in 2019 that an entirely new approach was required that would reinforce cultural heritage protection and community resilience through responsible and sustainable tourism management, while integrating current cross-cutting global policy orientations including the Paris Agreement and the 2030 SDGs Agenda and a focus on responsible tourism management. The impacts of the Covid 19 pandemic, further justified the approach taken and the extent of consultation involved in the preparation of the text.

This paper will introduce the charter, present its objectives for responsible tourism planning and management, and identify the relevance of the charter's principles and guidance for the archaeological heritage tourism in the context of climate change. It will outline the charter's emphasis on the creation of stakeholder opportunities for participatory governance and the integration of climate action and climate adaptation in sustainable management approaches that also prioritize community resilience.

4 RESPONSIBLE HERITAGE TOURISM IN SCOTLAND: A TRANSFORMATIONAL FRAMEWORK FOR CLIMATE ACTION IN TOURISM

Abstract author(s): Glindmeier, Vanessa - Davies, Mairi (HES Historic Environment Scotland)

Abstract format: Oral

As a large public body, Historic Environment Scotland (HES) has duties under the Climate Change (Scotland) Act 2009 that require it to contribute to climate change mitigation and adaptation, and to act sustainably. During the Covid-19 pandemic, HES, Scotland's largest operator of paid-for visitor attractions, has developed a Responsible Tourism Framework (RTF). The RTF positions HES as a leader in the adoption of responsible tourism principles, strengthening heritage tourism's contribution to better quality of life and meaningful experiences for all, now and in the future, while contributing to the delivery of national climate action ambitions, including the Scottish Government's 2045 Net Zero target. It will ensure HES provide visitors with the infrastructure, facilities, and information they need to make their visit as sustainable and responsible as possible, not only in economic terms, but by maximising wellbeing benefits to local communities, adapting our sites to the changing climate and reducing greenhouse gas emissions associated with tourism. The RTF has been informed by extensive internal, cross-organisational, and external consultation, as well as live on-site projects. One such project was the Doune Sustainable Tourism Project (STP), an exemplar demonstrating how the historic environment and heritage assets can make better places for people to live in and better places for people to visit. An invaluable pilot for the RTF development, the STP at Doune provided a model of how HES might address key challenges such as the reduction of the carbon footprint of tourism operations, encouraging social and cultural diversity, as well as maximising benefits of tourism for communities. The project looked beyond the boundaries of the recognised tourist attraction, Doune Castle, a scheduled monument, taking a regional destination approach working with local organisations, local authorities, and national agencies, demonstrating how site managers and visitors alike can participate in climate actions promoting responsible tourism.

563 SHAPING ARCHAEOLOGY THROUGH ETHICAL AND COMMUNITY-LED ACTIVIST PRACTICES

Session theme: 3. Heritage Narratives and Representations

Session organisers: Orlandi, Francesco (University of Bologna) - Lo Monaco, Viviana (São Paulo State University - UNESP) - Dolcetti, Francesca (University of Venice) - Montgomery Ramirez, Paul Edward (Cleveland State University) - Figueira da Hora, Juliana (Universidade de Santo Amaro - UNISA)

Session format: Regular session

The session focuses on the craft of archaeological knowledge in collaboration and tension with its contemporary socio-political circumstances. We are interested in delving into the intermediate spaces of interaction and politics that gravitate around sites of memory and contention, either enlisted or not in authorised heritage categories. Recurrent calls to democratise and decolonise knowledge about the past propitiated community engagement and collaborative methodologies, bringing to the fore the importance of co-creation of heritage interpretations and narratives in partnership with historically excluded or marginalised communities and stakeholders. Sparking reflection and reflexivity on the values, practices and modes of representation of archaeology also raises the question of epistemic authority at a time of surging populism and nationalism in Europe and beyond. This session invites papers discussing experiences,

challenges and lessons learned on what concepts and tools can be mobilised to tackle the uses of archaeological evidence and heritage politics for the sake of exclusionary political agendas, extractive-based research and contested development projects affecting local histories and territories.

Reinstating the political role of archaeological and heritage practice in the present, we encourage contributions dealing with all geographies and temporalities of analysis, and oriented toward a diverse array of topics, such as but not limited to:

- Misappropriation and misrecognition in public archaeology
- Multivocal, inclusive and decolonised formats of archaeological knowledge production, sharing and communication
- Decolonising archives and data governance in community-based practices
- Community-driven and values-led practices in archaeology and heritage
- Indigenous cosmologies, territories and political ontologies of heritage studies

ABSTRACTS

1 THE GOOD CREDIT INDIANS - ARCHAEOLOGY FROM AN INDIGENOUS PERSPECTIVE

Abstract author(s): Jamieson, Jordan (Mississauga of the New Credit)

Abstract format: Oral

I look to share from personal experience the difficulties and obstacles of becoming involved in the archaeological process, as well as the benefits and tremendous upsides it brings. For many indigenous communities there is an unseen cost of entry when trying to become involved in their cultural materials, and it comes in the form of compromising on their values from a cultural perspective.

To begin I will outline some of the foundational differences between the indigenous perspective and the western perspective. I examine how heavily influenced the outlook on cultural materials are viewed through that western lens, supported by legislation that stems from colonialism. Next, the importance of building relationships to the descendant communities, in whose cultural materials we work in. Not only that but pushing to evolve the relationships into meaningful change and building the capacity in which communities can become in control of their cultural materials.

As we look to better understand the past through archaeological materials, it's imperative that we begin to recognize the disparity and open the conversation of how we view, curate and interpret those cultural materials and remains.

2 STORIES WRITTEN IN THE TREES: COLLABORATIVE RESEARCH AND PRELIMINARY ANALYSIS OF ANCESTRAL TREES NEAR ANCHORAGE, ALASKA

Abstract author(s): Johnson, Norma (Chickaloon Village Traditional Council) - Ortiz, Liz (Department of Defense)

Abstract format: Oral

Many Ancestral trees, or culturally modified trees (CMTs) by Western terminology, have been identified by Tribal people on federally managed land just outside Anchorage, Alaska but had not been recognized or documented by formally trained researchers. The land in question is a unique study area that has been closed to public and Indigenous use for 80 years. Through proper consultation and partnership on archaeological investigations, Tribal and agency archaeologists have developed methods to recognize and record ancestral trees to be impacted by an upcoming project. This paper discusses how Indigenous knowledge assists Federal research and projects. Collecting data lost to Tribes because of the 20th century cultural erasure practices, data will contribute to the knowledge of the land use of the Dene between 1800 and 1940 when the access became restricted. These new methods can be applied to document Ancestral trees throughout the Upper Cook Inlet in South Central Alaska.

3 CHANGING DAILY PRACTICES THROUGH DESCENDANT COMMUNITY-INFORMED INSTITUTIONAL INTEGRITY

Abstract author(s): Thompson, Amanda D. - Thompson, Victor (University of Georgia, Laboratory of Archaeology) - Butler, Raelynn (Muscogee Nation, Historic and Cultural Preservation Department) - deBeaubien, Domonique (Seminole Tribe of Florida, Tribal Historic Preservation Office) - Panther, Miranda (Eastern Band of Cherokee Indians, Tribal Historic Preservation Office) - Fontenor, Raynella (Coushatta Tribe of Louisiana, Department of Cultural, Historical, and Natural Resources) - Hunt, Turner - Wendt, LeeAnne (Muscogee Nation, Department of Historic and Cultural Preservation) - Garland, Carey (University of Georgia, Laboratory of Archaeology)

Abstract format: Oral

While activists, researchers, and affected communities have called for efforts to decolonize institutions for some time now, recent political and social events have certainly spurred rapid calls to action. And while in some regions of the

world there has been a long history of collaboration, others, such as in the American Southeast, have lagged behind largely due to deeper histories of genocide and removal of the region's Indigenous people. We believe that the tide is changing towards practices beyond compliance, ones that are truly collaborative where tribal partners and archaeologists are equal partners in research endeavors. While individual researchers can and should engage descendant communities in partnered work, it is more difficult for an institution, particularly public academic institutions, to do this in a rapid fashion. The difference is related to both scale and complexity in the endeavor. One way forward, particularly for institutions of higher education, is through descendant community-informed institutional integrity (DCIII). DCIII can be thought of as a series of formalized dimensions. These dimensions- shared stewardship, multi-vocal approaches, bi-directional communication, trust, capacity building, equitable partnerships, knowledge sharing, transparency, and joint decision-making, guide descendant community engagement in policies and procedures within a research integrity program. This paper outlines some specific daily practices, as well as policies rooted in DCIII and enacted by the University of Georgia, Laboratory of Archaeology in the United States.

4 I'M NOT INDIGENOUS, I'M JUST CURIOUS AS YOU! EXPERIENCES OF RESETTLING COMMUNITIES AND SEARCHING FOR OTHER PEOPLE'S ANCESTORS IN MOZAMBIQUE

Abstract author(s): Gota, Pascoal (Department of Archaeology and Ancient History, Uppsala University)

Abstract format: Oral

Owing to centuries of colonialism and the political appropriation of the concept indigenous by the colonial regime, in Mozambique being called indigenous is not a good thing. By pointing to the challenges of addressing indigenous archaeology in Mozambique, in this paper I bring to discussion my experiences as an intern that was actively engaged in resettling communities outside of Limpopo National Park (LNP), and to later become a researcher interested in recording the places of other people's ancestors in locally protected forest patches in Inhambane province. Imagining futures memories characterised by being far from the homeland and the lost of connection with the land and ancestral places, I question how a one-sided knowledge about environmental conservation and without taking in account the wishes of local people might contribute to erase the 'emotional topography' and creating memories of displacements. In this context, the notion of indigenous archaeology is quite different from the way archaeological research is carried out in Mozambique and how local people are open-minded to share and have a mutual understanding of their past with outsiders. Taking in account local epistemologies and ontologies, I propose a theoretical framework that serves as a gateway for a more balanced engagement with local people in the context of writing their pasts and research beyond indigenous archaeology. From the theoretical framework I widen the discussion by suggesting a more open and inclusive approach of researching the past by conceptualising the notion of local archaeology or archaeology with the locals. Combining the experiences of being part of resettling local people and now documenting royal family lineages and local heritage sites in Inhambane province I conclude by giving some examples on how local communities can formally have the chance to secure their lands and recognised stewards of tangible and intangible heritage in locally protected forests.

5 PUBLIC ARCHEOLOGY AND URBANIZATION IN SÃO PAULO, BRAZIL (18TH AND 19TH CENTURIES): THE CASE OF THE CEMITÉRIO DOS AFLITOS

Abstract author(s): da Hora, Juliana (University of Santo Amaro - UNISA) - Porto, Vagner (University of Sao Paulo - USP)

Abstract format: Oral

This presentation aims to discuss the intentional social erasure of enslaved and freed black people in São Paulo at the turn of the 19th century. Recent archaeological work at São Paulo's city center, more precisely at Liberdade neighborhood, has made this discussion come to light. During the above mentioned archaeological works, an old cemetery, called Cemitério dos Aflitos (Cemetery of the Afflicted) was unveiled. This was the first public cemetery in the city of São Paulo, a place where slaves, indigents, and condemned people of the city were buried. This black memory of the neighborhood was, throughout the 20th century, completely erased, as the presence of Japanese immigrants began to strengthen in the area. Today the Japanese memory in the neighborhood is consolidated. The theme of urban cemeteries in slave-owning Brazil between the 18th and 19th centuries is inserted in a logic of erasures, violence, and the jettisoning of the underprivileged in the city. The location of the Cemitério dos Aflitos, considered "extramural" in this period, was surrounded by a hygienist aesthetics discourse in vogue between the end of the 19th century regarding the central areas of the city. In the formalization of the territory, the Cemitério dos Aflitos is extinguished and buildings and streets are built on the site, undermining the place where an incalculable number of people had been buried violating the bodies and memory of the victims and excluding them from the social history of the city. Because of these archaeological finds, with the search for the preservation of the archaeological collection and memory of the Africans who lived in the Liberdade neighborhood during the period of slavery, there is an effort to make this space heritage, creating the Memorial dos Aflitos (Memorial of the Afflicted).

6 PACHAMAMA IN THE POLITICAL: INTERCULTURAL WORK AND TRANSGRESSIVE INDIGENEITY FOR THE COMMUNITY HERITAGE OF AMAICHA DEL VALLE (NORTHWEST ARGENTINA)

Abstract author(s): Orlandi, Francesco (University of Bologna)

Abstract format: Oral

The paper presents insights stemming from an accidental collaborative research in which I was invited to participate during my doctoral fieldwork in the Indigenous Community of Amaicha del Valle (CIAV, Tucumán, Argentina) that led to the creation of the bespoke category of “community heritage” within the current heritage legislation of the Province of Tucumán. The fading dream of a solar power plant triggered the recognition of the community heritage values embedded in a petroglyph that was found in the same area. This is part of a larger archaeological surface that had been studied many years before the planned development project but was dismissed during the mandatory impact assessment and consultation process with the CIAV authorities and the general assembly because the majority was persuaded by promises of job opportunities and reduced energy costs. The Council of Elders of the CIAV and the cacique, the Indigenous rights lawyer Eduardo Nieva, claimed that the community’s denial of the heritage significance of the petroglyph was due to the misinterpretation of the motif engraved on the stone block by the archaeologists who first studied it. The Indigenous authorities associated the drawing with the oral history linking the Andean figure of the fox with a devil-like figure, known as chiqui. The figure-concept of chiqui offered a cue to expose the regulatory regimes of indigenous heritage in multicultural policies and international development interventions, thus revealing the cosmopolitical dimension of indigenous peoples’ struggles for heritage and territory. Its appearance and concealment, in contrast to the much better-known figure of Pachamama and in relation to the ethnodelopment interventions implemented in the recent past in the Calchaquí valleys, allow for the emergence of a composite political assemblage that questions the compartmentalisation of heritage categories and, at the same time, foregrounds the space of friction in which Indigenous self-determination unravels.

564 YESTERDAY’S YARNS AND TOMORROW’S TALES? THE RELEVANCE OF RESEARCH FRAMEWORKS FOR A SUSTAINABLE ARCHAEOLOGY

Session theme: 3. Heritage Narratives and Representations

Session organisers: Spencer, Helen (Society of Antiquaries of Scotland) - Miles, Daniel (Historic England) - Rennell, Rebecca (University of the Highlands and Islands) - O’Keeffe, John (Discovery Programme) - van der Jagt, Inge (Cultural Heritage Agency of the Netherlands)

Session format: Regular session

The creation, development and use of Research Frameworks and Agendas can be key in weaving the narratives of past, present and future archaeological research. Research Frameworks and Agendas are no longer considered to be static and there is a need to continually update and evaluate them. While many research agendas are now online and widely available to all users, the question of how they can be managed, linked together, used more widely, and be updated in a sustainable manner is becoming more prevalent. Five years since the Session on developing a European Network of Linked Research Agendas at the 2018 EAA in Barcelona, this session will invite papers from across Europe to share how they have approached the ongoing development of national, regional and thematic frameworks. How are research frameworks being established? Once established, how are research frameworks and agendas better used and incorporated into archaeological practice? Do research frameworks only relate to the work of professional archaeologists, or are they being used by the wider public? How is the public involved in the creation of research frameworks and what are the benefits? How are research frameworks used to communicate archaeology to a wider audience? How might the processes to create, share and update frameworks become more sustainable?

ABSTRACTS

1 CREATING EAC GUIDANCE TO DEVELOP AND SUPPORT MORE SUSTAINABLE AND INCLUSIVE RESEARCH FRAMEWORKS

Abstract author(s): van der Jagt, Inge (Cultural Heritage Agency of the Netherlands) - Miles, Daniel (Historic England)

Abstract format: Oral

This presentation will highlight the work undertaken so far to create a suite of guidance to support people who are considering developing national research frameworks. This has included analyzing existing research frameworks and consulting our working group to understand the drivers for and processes behind their creation. This has shown that there is no standard way for their creation and factors including the audience and their user needs determines to a large extent the approach undertaken to create a framework in terms of its content, scope and format. This is framed

within the political, legislative, economic and social context of the state developing the research framework. There is also an important requirement to enable the frameworks to become sustainable in terms of their future development and management, to move them from a static point in time to a live entity that can adapt and reflect change, innovation and different socio-cultural drivers that may need to be considered when making future choices.

With our paper we would like to give you an insight into the various choices you can make when making or renewing a research framework.

2 PAST, PRESENT AND FUTURE - THE NEXT 10 YEARS OF THE SCARF

Abstract author(s): Allison, Jennifer - Spencer, Helen (Society of Antiquaries of Scotland)

Abstract format: Oral

The Scottish Archaeological Research Framework (ScARF) recently celebrated 10 years since it was launched as one of the first web-based, updateable research frameworks. This talk will briefly look back at the origins of the project highlighting the successes and challenges since it was first created. The talk will then discuss plans for the future of the ScARF project, and how it has now become a key objective of Scotland's Archaeology Strategy. Over the years the priorities of the project have evolved from being a primarily academic exercise to inform research to becoming an essential resource for applied and community archaeologists. As we look to the next 10 years, the talk will consider how we aim to maintain the high quality of ScARF while making it more easily updateable, sustainable and more useful to professional archaeological practice by incorporating research questions into OASIS V. We will also show the importance of increasing its value, relevance and useability to the wider public with examples from recent – and future – regional projects to show how our approach is changing.

3 RESEARCH FRAMEWORKS AND WORLD HERITAGE: SUSTAINING ARCHAEOLOGICAL RESEARCH IN THE DERWENT VALLEY MILLS WORLD HERITAGE SITE, DERBYSHIRE, UK

Abstract author(s): Knight, David (York Archaeology; Derwent Valley Mills Partnership) - Owen, Vicky (York Archaeology)

Abstract format: Oral

We focus in this presentation upon the strategies employed in developing, maintaining and enhancing a Research Agenda and Strategy for the Derwent Valley Mills World Heritage Site: a 24km stretch of the Derwent Valley that was inscribed on UNESCO's World Heritage List in 2001 in recognition of its pivotal role in the Industrial Revolution. This micro-framework falls within the area covered by the East Midlands Historic Environment Research Framework, with which it is closely linked, and has been transformed from a paper publication to an interactive digital resource that it is hoped will be used and added to by stakeholders from across the historic environment spectrum. Development of this interactive resource has raised in microcosm many issues that will be familiar to those striving to develop publicly accessible research frameworks. In particular, how can we ensure sustainable management of the framework and updating of the content as research evolves and as research priorities change? How can we encourage use of the framework by archaeological contractors and consultants, planners, academics, independent researchers, community archaeology groups and the wider public? With these questions in mind, we will focus upon the methods used to encourage stakeholder engagement during compilation of this framework; the strategies devised for involving stakeholders in longer term maintenance and updating of the resource; measures for encouraging research by stakeholders across the historic environment spectrum; communication of that research; and integration of this resource into the Research Framework for the wider East Midlands region.

4 BEYOND THE WATER'S EDGE - CONNECTING RESEARCH AND RESEARCH FRAMEWORKS. A PERSPECTIVE FROM SCOTLAND'S ISLANDS

Abstract author(s): Rennell, Rebecca (UHI Archaeology Institute)

Abstract format: Oral

For regional research frameworks in archaeology to be effective and efficient they need to be geographically focused. However, if our frameworks are to be meaningful, they also need to acknowledge and incorporate shared research gaps beyond the geographic remit. Finding the right balance between regional boundaries and wider links is challenging. This dynamic is particularly acute in an island-context where the sea both bounds and connects places – a theme that island archaeologists have long debated and explored in their research.

In this paper I reflect on some of the ways we've navigated boundaries and connections within the development of the regional research framework for Scotland's islands - SIRFA. Our approach is essentially multi-scalar – moving between archipelagos, individual islands and even islands within islands. We also recognize a tendency amongst some archaeologists to make 'islands' of themselves and their work, leading to isolated narratives and siloed research agendas. Exploring themes of connection and isolation in the archaeological past and research-present is a key aim. In this

paper I explore some of the implications of island-based geographical and political boundaries in the development of research frameworks and reflect on the conceptual and methodological challenges and opportunities we've encountered via our multi-scalar, island-based approach. More specifically - and with reference to Article 174 of the Treaty on the Functioning of the EU (TFEU) and UNESCO Small Islands Developing States (SIDS) - I argue that the island context invokes important questions about the relationship between 'core' and 'periphery', both for our understanding of archaeological resources and their research potential, and the role of heritage and heritage management within a modern European setting. The aim is that this paper will stimulate discussion on the wider articulation of regional, national and international research frameworks and the value and validity of a specific island approach.

5 HILLS AND VALLEYS - DOING THINGS DIFFERENTLY IN THE CLYDE VALLEY

Abstract author(s): Spencer, Helen (Society of Antiquaries of Scotland) - MacGregor, Gavin (Archaeology Scotland) - Brophy, Kenny (University of Glasgow)

Abstract format: Oral

The 'Clyde Valley' research framework is the latest regional framework to get underway as part of the Scottish Archaeological Research Framework family. It will concentrate on the archaeology of 8 local authority areas in west-central Scotland. While this area only covers c. 4% of Scotland's land mass it is home to around 30 % of its population and has the potential to reach a large number of people unfamiliar with the heritage of the region. The Clyde Valley region has suffered over many years from relative heritage underfunding per capita compared to other regions of Scotland. The region also has some of the greatest social and economic challenges in Scotland and as such, the value of archaeological research outcomes with a wider public benefit is potentially particularly significant. This talk will discuss how this new regional research framework project has the opportunity to increase understanding and engagement with the past, enhance communities' use of the historic environment as well as strengthen the resilience of the historic environment in the region.

6 JOINED-UP THINKING, JOINED-UP PRACTICE: DEVELOPING A STRATEGIC ARCHAEOLOGICAL RESEARCH FRAMEWORK FOR THE ISLAND OF IRELAND

Abstract author(s): Meegan, Eimear - O'Keeffe, John - Soverino, Tiziana (The Discovery Programme)

Abstract format: Oral

In 2017, the Royal Irish Academy published *Archaeology 2025: Strategic Pathways for Archaeology in Ireland*, which recommended the development of an Irish archaeological research framework as a means of targeting gaps in knowledge and supporting focused collaboration in a way that would ensure effective use of resources. More recently, both *Heritage Ireland 2030* and *Northern Ireland's Archaeology 2030: A Strategic Approach* have provided fresh impetus for progress in this area. They present an opportunity to consider the development of a Strategic Archaeological Research Framework for the island of Ireland, working across the two jurisdictions and connecting with the ongoing use of research frameworks by neighbouring jurisdictions. In this context, the Discovery Programme: Centre for Archaeology and Innovation Ireland has embarked on a multi-year project to develop such a framework, working closely with their primary funder, the Heritage Council, and with the National Monuments Service.

Through co-design and constructive debate, this project seeks to establish a framework that is held in common by archaeological practitioners and is used to facilitate closer working across disciplines and specialisms in archaeology. It further seeks to use this framework to encourage greater collaboration with established and new stakeholders whose work, knowledge and interest is both relevant to and would benefit from application in archaeological research. This will include the wider public alongside specialist industry, commercial and sectoral groups outside of 'mainstream' archaeology. Rather than constraining the wider archaeological/heritage community, it will embrace external drivers of activity, such as development and land use change, as well as the more traditional spurs of the archaeological endeavour, including curiosity, opportunity and 'blue skies thinking'.

The proposed paper is concerned with the preliminary stages of the framework's development, providing an update on current progress as well as offering some thoughts on the key challenges and opportunities facing the project.

ANIMALS MAKE IDENTITIES: HOW PEOPLE EXPRESSED THEIR SOCIAL AFFINITIES IN THE STONE AGE? [PAM]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Macane, Aija (University of Helsinki; University of Latvia, Institute of Latvian History) - Živaljević, Ivana (University of Novi Sad) - Mannermaa, Kristiina (University of Helsinki)

Session format: Regular session

Animals were the main companions, both in a material and a cosmological sense, inhabiting the Stone Age environments together with humans. Human-animal relationships were forged through the interactions and engagements in daily life, which in different forms continued to be present also after the death of animals and humans.

Burials are considered as one of the most vivid representations of human identities. Animal remains, particularly tooth pendants, comprise a significant part of hunter-gatherer grave inventories. Animal remains and artefacts made from animal body parts have been assigned as having active agency of shaping and transforming human identities. Animal derived objects (e.g., tools and various details of the costume) and their manufacture technology can represent the attitudes relating to identity, origin, kinship, family, and social roles.

The ecology of animal species, such as their behaviour and feeding habits, afford particular interspecies relations and affects how they were perceived by humans. Animals have had various roles in human societies, but certain species were more essential ideologically and symbolically, while others were more vital for subsistence. Nevertheless, only certain animal species or body parts were chosen to follow in the grave with the deceased.

With this session we aim to bring together zooarchaeological, bioarchaeological and artefact research in order to understand how animals and animal-derived artefacts contributed in making and showing identities of humans in Stone Age. The focus is in hunter-gatherer societies but we welcome also studies focusing in pastoral and early farming communities. We especially call for interdisciplinary and interpretative studies on the active social roles of animals, their body parts, and artefacts made from animal materials among prehistoric populations. We welcome contributions dealing with all archaeological contexts, not solely burials.

ABSTRACTS

1 WHERE DO ARTEFACTS BEGIN? ANIMAL BODIES IN THE DANUBE GORGES MESOLITHIC

Abstract author(s): Živaljevic, Ivana (Department of History, Faculty of Philosophy, University of Novi Sad)

Abstract format: Oral

The Modernist Project of separating Culture and Nature has had a profound effect on archaeology, namely by firmly placing objects made by human hands (artefacts) on one side, and the material world of the landscape, including human, animal and plant physical remains on the other side of this divide. The reverberations of this heritage are especially relevant when considering objects made from animal materials – bone, antler and teeth, ‘becoming’ artefacts through human intervention. But where is, then, that artefacts begin? At what point do animal body parts in their ‘natural’ state become ‘artificial’? I explore these issues by looking into the Mesolithic bodily decoration practices in the Danube Gorges, which included ornaments made from cyprinid (*Rutilus frisii* or pearlfish) pharyngeal teeth. Apart from ornaments, caches of pearlfish pharyngeal bones with teeth were also found. They were collected during the seasonal run of pearlfish, migrating to the Danube from the Black Sea. The annual arrival of the fish was expected, and the fishing carefully planned. Thus, the ornament production chaîne opératoire included a number of mental preconceptions, emerging from lived experiences with other nonhuman beings, and further blurring the boundary between the ‘natural’ and the ‘artificial’ world. Apart from pearlfish teeth ornaments, I also extend this argument to include other animal body parts occurring in human burials in this particular context. I draw from Tim Ingold’s notions of blurry “scales of artificiality”, focusing on the histories of beings and materials, rather than on fixed attributes.

2 TRACING HUMAN AND ANIMAL IDENTITIES AT THE ZVEJNIEKI CEMETERY (LATVIA)

Abstract author(s): Macane, Aija (University of Helsinki; University of Latvia, Institute of Latvian History)

Abstract format: Oral

Artefacts found in burials have generally been considered to reflect the life history of the buried person. However, to what extent this can be ascribed to all artefacts found in the burial is still debatable. Hunter-gatherer burials in north-eastern Europe contain an abundance of animal remains along with objects made from other raw materials such as amber, various stones, copper, fossils.

The diversity of animal remains found in grave inventories at the Zvejnieki cemetery (Latvia) provide an excellent material to discuss human-animal relationships and the roles animals played for the prehistoric hunter-gatherer groups.

Animal materials have been found in different parts of the burial, associated directly with the human body or other objects in the grave. Some of them are worked into artefacts, while others can be found in their natural state. They may have been used as a means of personal or group identification, to decorate oneself, or for other purposes. The Zvejnieki material gives the opportunity not only to discuss expressions of human identities, but also to approach identities and life histories of animals. In addition, the chronological framework of Zvejnieki spans five millennia (8th to the 3rd millennium cal BC), making it possible to discuss the dynamics of the relationship between humans and animals, and the changing attitudes towards different animal species. Through several case studies from the Zvejnieki cemetery, this presentation explores identities of humans and animals and how they were mediated in hunter-gatherer burials.

3 INTRODUCING ELKS: FINAL PALAEOLITHIC AND THE EARLIEST MESOLITHIC EURASIAN ELKS AND THEIR SIGNIFICANCE IN THE EASTERN BALTIC HUNTER-GATHERER SOCIETIES

Abstract author(s): Rimkus, Tomas (Centre for Baltic and Scandinavian Archaeology - ZBSA; Institute of Baltic Region History and Archaeology, Klaipėda University; Vilnius Academy of Arts; University of Latvia) - Iršėnas, Marius - Butrimas, Adomas (Vilnius Academy of Arts) - Mannermaa, Kristiina (University of Helsinki; Vilnius Academy of Arts) - Zagorska, Ilga (University of Latvia)

Abstract format: Oral

Late Glacial archaeozoological evidence of animal remains in the eastern Baltic indicate that one of the main animal species that lived and was hunted by the hunter-gatherers was reindeer (*Rangifer tarandus*). However, no evidence of other animal species that was hunted by humans and the use of its skeletal remains for tools processing is available, therefore, for many years reindeer was described as the most important animal for human societies during the Late Glacial.

Recent AMS 14C and species identification (ZooMS) analyses gave the first evidence of the Late Glacial Eurasian elk (*Alces alces*) in the territories of Latvia and Lithuania. Not only their shed antlers but also tools made of their bones were identified. With scarce archaeozoological data at the moment, we observe that elk became already important for human needs in the Final Palaeolithic. More data emerges in the early Preboreal, when gradual changes in cultural and environment happened. Our data suggest the intensification of elks hunting and the use of their bones and antlers for various implements manufacturing. Within this paper we will focus on observing the chronology of elk remains in the Final Palaeolithic and the earliest Mesolithic archaeozoological data, however, with these results we will seek one of our main goals – to track the changes and inventions in hunter-gatherer elk skeletal-based technologies, when people adapted to new raw materials and learned to process them. In the later stages of the Holocene, we observe elk becoming one of the key animals in northern hunter-gatherers' worldview. Tooth pendants and elk-shaped figurines indicate how significant it became in many ways; however, current data allows us to confirm that the very beginning of it already happened at the end of the Late Glacial.

4 WOODPECKER FEATHERS AND CERVID HAIRS – MICROSCOPIC RESIDUES REFLECT HUMAN-ANIMAL RELATIONS AT THE MESOLITHIC SKATEHOLM I AND II CEMETERIES, SWEDEN

Abstract author(s): Kirkinen, Tuija (University of Helsinki)

Abstract format: Oral

Skateholm I and II cemeteries, located in the southernmost Sweden at the shore of the Baltic Sea, date to the 6th-5th millennium BCE. They were excavated in 1980-1984 by Lars Larsson and since then, the site has provided research themes for several investigations and PhD thesis. Skateholm I was re-visited in 2022, when the University of Lund organized its training excavations at the adjacent Ertebølle culture settlement site.

In this paper, the aim is to study the use of soft organic materials such as skins, fur and feathers at Skateholm. Our knowledge of these materials is rather limited because they usually decompose almost totally. However, this issue is possible to study by searching soil samples for microscopic residues. In this study, the results of soil analysis from Skateholm I and II as well as from the recent settlement site excavation are presented. The total number of the samples is about 200, and especially the graves in which several samples have been taken provide a unique material for the research on microscopic particles such as hairs, feather fragments and plant fibres. The research on materials, which served in wrapping and covering the dead, in furnishing the grave, for clothes and accessories, and for grave goods, can help us to understand deeper the material culture and human-animal relations during the Late Mesolithic Era in Scandinavia.

This research is part of Animals Make Identities (AMI) project funded by ERC (PI Kristiina Mannermaa). The project investigates social links between humans and animals in hunter-gatherer burial sites in North-East Europe, c. 9000–7500 years ago.

5 ADORNMENTS MADE FROM ANIMAL MATERIALS OF THE NEOLITHIC MARIUPOL TYPE CEMETERIES

Abstract author(s): Mykhailova, Nataliia (Institute of Archaeology of National Academy of Sciences of Ukraine)

Abstract format: Oral

The Lower Dnieper region was an outstanding landscape phenomenon in prehistoric times. During the Stone Age, the area had great economic and sacral significance. About 30 cemeteries of the so-called Mariupol type (late Mesolithic – Neolithic) are known. They are located from the Dniester River to the Don River, mainly on the Dnieper rapids and the Lower Dnipro. Many of the dead were accompanied by rich grave goods: adornments made from bone, stone, pearl, carp teeth, deer canines and boar tusks. The most commonly animal materials were used. Pendants made of deer canines were the most numerous. Numerous carp teeth, particularly, *Cyprinus carpio* and *Rutilus frisii* are the second important feature of the Mariupol type burial inventory.

The late burial complexes, in particular, the Mariupol cemetery, are characterized by a variety of adornments which are unknown in other areas. The most impressive personal ornaments are the perforated boar tusks. These ornaments are exclusively abundant at the Mariupol cemetery; they are inherent to male, female and children burials. Plates, made of boar tusks of various shapes, are the most intriguing feature of the Mariupol type grave offerings. They are elaborately worked. Their edges sometimes bear enigmatic incisions.

The study of these grave goods provides information on the rites of the life cycle, and among others, the ceremonies marking the change of age and social status, gender identification and marital status.

6 ANIMALS AS TOTEMS: THE POSSIBLE REFLECTION OF THIS PHENOMENON IN SCULPTED PENDANTS OF THE EAST EUROPEAN FOREST NEOLITHIC COMMUNITIES

Abstract author(s): Kashina, Ekaterina (-)

Abstract format: Oral

In this talk, the interpretation of multiple bone, amber and flint pendants representing animals and humans, is given based on the recognition of the East European Late Neolithic forest hunter-gatherer-fishers' totemic worldview. This assumption is based on proven conclusions about developed support networks over this large territory, connecting communities by marriage and exchange of goods. This state of affairs can be compared with ethnographical data for Australian foragers. Australian communities featured a highly developed and diverse totemic worldview based on notions of universal kinship and an enduring connection with the certain territory, while their totemic animals were represented by edible species, mostly birds. Also, care for totemic animal survival played a significant role in communities' ethics (Tokarev 1956; Artemova 2009).

Pendants of bone, antler, amber and flint, representing a variety of bird species, snakes, beaver, otter, fish, as well as anthropomorphs, were apparently sewn onto clothes and headwear, and worn in lifetime. They could depict totemic animal (and human) ancestors. This conclusion was made considering the results of pendants' mapping, which show that identical animal species are usually grouped within one or two large rivers basins, possibly marking certain communities' territory, whose inhabitants revered a certain ancestor. Among these images were capercaillie, snake, swan, ducks, beaver, and fish. Otter, heron, hazel grouse, and crane are known from single cases. Finds of different bird species pendants in some dwellings and burials of the Volosovo culture could reflect the marital ties of different totemic image possessors, while only the beaver pendants from the Valma (Estonia) double burial might witness blood relatives buried together.

7 OF PIGS AND THEIR HUMANS, OF EVERYDAY AND OTHERWORLDLY CONNECTIONS

Abstract author(s): Pasaric, Maja (Institute of Ethnology and Folklore Research, Zagreb)

Abstract format: Oral

Disarticulated and fragmented or intact remains of pigs have been unearthed in layers, in pits and burials within Neolithic settlements of eastern Croatia. Pigs were buried complete or almost complete, alone or in the company of humans. Especially interesting burial is the one from the settlement Đakovo-Franjevac where two pigs were placed next to an adult man, yet their complete bodies were arranged in different manners. In the vicinity of this find another pit containing a single, well preserved and complete skeleton of a pig was also unearthed. The contribution explores what kind of communication was possibly exchanged between humans, pigs and the rest of their shared environment and how pigs and humans might have affected each other bodily and emotionally. Encounters between pigs and humans and their shared embodied experiences and might have created powerful affects for individuals of both species and even generated affective atmospheres, which could have been explored, negotiated and acknowledged through material culture and ritual communication.

BEYOND BEAN COUNTING: CURRENT, EMERGING AND ANTICIPATED APPROACHES TO BENEFITTING PEOPLE AND PLACES THROUGH ARCHAEOLOGY [EAA PUBLIC BENEFITS ADVISORY COMMITTEE]

Session theme: 3. Heritage Narratives and Representations

Session organisers: Lewis, Carenza (University of Lincoln) - Schülke, Almut (University of Oslo) - Rummel, Christoph (Römisch-Germanische Kommission des Deutschen Archäologischen Instituts)

Session format: Discussion session

The benefits of archaeology to people and places are most easily (and therefore most often) measured in 'bean counting' financial terms, but this in no way represents their full range, actual and potential. Effective understanding, delivery, recognition, dissemination and nurture of the myriad benefits of archaeology is essential to sustaining a virtuous spiral in which these benefits can be ever more widely experienced, valued and increased.

The new EAA Public Benefits Advisory Committee aims to help archaeologists (1) respectfully, helpfully and constructively share archaeological knowledge and opportunities with wider publics; (2) advance knowledge and understanding of the ways and means by which archaeology benefits people and places; (3) share data, information and insights demonstrating the benefits of archaeology, so their multifaceted values can be recognised; (4) be alert and open to new opportunities to achieve, capture and understand the public benefit of archaeology in the future.

In order to help us achieve the above aims, we would like this session to review current work and ideas for the future, inviting contributions from EAA members across Europe providing insight and opinion on the following topics:

1. In what ways does archaeology currently benefit wider society in Europe and beyond and how are these benefits measured?
2. What are the commonalities and differences across Europe in (a) conceptualising and (b) delivering public benefit through archaeology?
3. In what ways has the capacity of archaeology to benefit people and places been affected by changing social, political and economic conditions in the 2020s?
4. What future problems, challenges and opportunities can be anticipated for those seeking to enable archaeology to be of greater benefit to society.
5. How can information about archaeology as a public benefit best be disseminated to archaeologists and policy-makers within in and beyond the heritage sector?

ABSTRACTS

1 THE FUTURE OF THE PAST: THE EAA ADVISORY GROUP HELPING ARCHAEOLOGY, PEOPLE AND PLACES NOW AND INTO THE FUTURE

Abstract author(s): Lewis, Carenza (University of Lincoln) - Darvill, Timothy (University of Bournemouth) - Rummel, Christoph (Römisch-Germanische Kommission des Deutschen Archäologischen Instituts) - Schülke, Almut (University of Oslo) - Fernández Fernández, Jesús (Universidad de Oviedo)

Abstract format: Oral

The importance of increasing the range and reach of archaeology's benefit to wider society, and of raising awareness of these benefits across and beyond the archaeological sector, was demonstrated in 2022 by the creation of a new EAA Advisory Group. This is a small group with a big remit, and this paper aims to draw the wider EAA membership into discussion into how it can best nurture archaeology in Europe as a practice which benefits people and places across the continent, now and into the future.

This paper will outline the current aims and objectives of the new Public Benefits Advisory Group as stated in its Terms of Reference, as a stimulus to wider discussion. The overarching aim of the Advisory Group to ensure archaeology and archaeologists in Europe are best equipped to achieve and promote the public benefits of archaeology. This aim is underpinned by five subsidiary aims relating to the range of current activity through which archaeology delivers wider benefits across Europe, its variation in different states, changes over time in attitudes to archaeology as a 'public good', emerging opportunities and threats to current practice, and dissemination. To achieve these aims the Advisory Group has identified eight specific objectives.

We hope this paper will stimulate discussion and engagement which will increase the Group's capacity to nurture archaeology as a 'public good' to benefit from the 'hive mind' of the EAA community, as we move forward.

2 ARCHAEOLOGY 2030: A STRATEGIC APPROACH FOR NORTHERN IRELAND, AN UPDATE

Abstract author(s): Murray, Bronagh (Historic Environment Division)

Abstract format: Oral

Northern Ireland has a rich archaeological heritage, consisting of over 17000 Monuments recorded in the Northern Ireland Sites and Monuments Record, with an additional 4000 Defence Heritage sites recorded on a separate register. Archaeology 2030 is a ten-year project to develop a strategic approach for archaeology in Northern Ireland. The strategic vision of Archaeology 2030 is for archaeology to be accessed and valued by as many people as possible, led by a sector which is healthy, resilient and connected. The Strategic Vision has five aims: Archaeology on the ground; Understanding the past; Sustaining the Historic environment; Engaging and enriching lives; Innovation, understanding and skills. Archaeology 2030: A Strategic Approach for Northern Ireland, sets out how Northern Ireland as a society can develop our engagement with, and understanding of, our archaeology.

The project is currently in its strategic delivery phase, establishing a Project Board which is led by a cross-sectoral membership that represents different groups within the archaeological community of Northern Ireland. Eight strategic Working Groups chaired by Project Board members actively contribute to the development and delivery of the key objectives of the Archaeology 2030 strategy.

This paper aims to present an updated account of the development, aims and key milestones of Archaeology 2030: A Strategic Approach for Northern Ireland.

3 CARE FOR THE FUTURE - COMPARING APPROACHES TO CAPTURING THE PUBLIC BENEFITS OF PARTICIPATIVE ARCHAEOLOGY

Abstract author(s): Vareka, Pavel (University of West Bohemia) - Lewis, Carena (University of Lincoln) - van Londen, Heleen (University of Amsterdam) - Marciniak, Arkadiusz (Poznan University) - Verspay, Johan (University of Amsterdam)

Abstract format: Oral

This paper will compare and contrast two different approaches, one qualitative, one quantitative, used to capture the impacts of participation in community archaeology in the CARE project (Community Archaeology in Rural Environments Meeting Societal Challenges) between 2019 and 2022.

CARE began in February 2019, aiming to explore the impact of involving rural residents in archaeological excavations investigating the long-term development of the places where they live. In the first year more than 200 people of all ages and backgrounds took part in the Netherlands, Czech Republic, Poland and UK. More than 1000 residents of local communities have taken part, with impact data capture from around a third of these. One aim of the project was to develop effective ways to capture impact data. This paper will compare two of these, one quantitative, one qualitative. Firstly it will present the methods and insights gained from a quantitative quasi-experimental survey taken at two time points by psychologists which allowed changes in responses from participants and compared these with a control group or non-participants. Secondly we will review the methods and insights from post-participation survey capturing qualitative data from participants into their attitudes to their experience.

We will conclude by considering how emerging insights from CARE project evaluation of the impact of participation in community archaeology may enable the archaeology sector to better support people and places in the future

4 WHAT ARE THE APPLICATIONS OF ARCHAEOLOGY IN EVERYDAY LIFE?

Abstract author(s): Gransard-Desmond, Jean-Olivier (ArkéoTopia, une autre voie pour l'archéologie)

Abstract format: Oral

Like any scientific discipline, the goal of archaeology is to produce knowledge based on data. So how can archaeology already benefit society? Aside from a specialized community publishing for itself, what are those benefits to society? In fact, everyone uses the results of archaeology, but without knowing it. Like Mr. Jourdain in Molière's comédie-ballet, everyone uses archaeology from school to adulthood in our interactions with others without realizing that it is thanks to archaeology that we can do so. From school to diplomatic relations, from the economy to the protection of cultural heritage, we will show how much archaeology is present in our daily life. This reality is not sufficiently recognized inside our archaeological community, which explains why we still wonder about our place in society. This is why this issue of the applications of archaeology, whether beneficial or harmful, represents a challenge for those who seek to make archaeology even more useful to society. How do we communicate this reality to archaeologists and policy-makers within and beyond the heritage sector? How can we encourage new forms of public service? Through this presentation, these questions will open the debate.

A TWIST IN THE TALE: COILED, SPUN AND ROLLED STORIES FROM ARTEFACT STUDIES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Adams, Sophia (British Museum) - Giles, Melanie (University of Manchester) - Brück, Joanna (University College Dublin) - Miller Bonney, Emily (California State University Fullerton)

Session format: Regular session

Current research on artefacts is highlighting more and more often the sharing of skills, techniques and designs across media, either intentionally or accidentally. One particular form that appears in metals, organic fibres, ceramics and more, is the twist. From spun yarn to twisted torcs, from lime bast cord to cord decorated pottery, the study of all these artefacts tells us stories about physical dexterity, created strength, tactile qualities and visual effects. In this session we invite speakers to share the stories of their twisted artefacts. These may be stories of the processes of studying and interpreting the artefact, design, form and composition. Or stories of the past told through twisted artefacts. Perhaps stories where the study has revealed an unexpected twist. Or stories in the sense of oral storytelling, poems, narrative artworks and stories created from the study of artefacts that contain a twist. Biographical, autobiographical, non-fiction and consciously fictional are all invited. We welcome papers that focus on the presentation of stories as well as papers that focus on the content of the story. Through these stories we aim to investigate the role and value of creativity, the benefits and function of twisting different materials and the relationship between storytelling and artefact making in the past and present. Presenters and the audience might be heritage communicators, archaeological scientists, artefact specialists, makers, artists, curators, researchers, analysts and anyone who enjoys a good yarn. Artefacts might be cord bound items, spiral forms, plaited shapes or decorated with rolled wires. We encourage papers from across the globe and from all periods.

ABSTRACTS

1 A TWIST IN THE TAIL: CATTLE HAIR AND OTHER TWISTED, WOVEN AND BRAIDED ORGANICS FROM BRITISH EARLY BRONZE AGE BURIALS

Abstract author(s): Bruck, Joanna (University College Dublin)

Abstract format: Oral

In 2011, a cremation burial accompanied by an extraordinary array of organic artefacts was found in an Early Bronze Age cist at Whitehorse Hill in Devon. Amongst these was a finely-braided armband made from cattle tail hair and decorated with tin studs, as well as a coiled basket of lime bast, a fragment of nettle fibre textile, and a selection of other objects including a composite necklace of amber, shale, clay and tin beads and part of a bear pelt. Building on the excellent published analyses of the braided armband and the other coiled, woven and twisted organics from Whitehorse Hill, as well as artefacts from other Early Bronze Age burials, this paper will consider how such ways of making created embodied links between people and the plant and animal worlds in which they lived. The act of twisting and braiding made connections more visible, emphasizing the strength, beauty and significance of those links.

2 AN EXPERIMENTAL APPROACH TO THE PRODUCTION AND EFFECTIVENESS OF NEOLITHIC BOWSTRINGS

Abstract author(s): Romero-Brugués, Susagna - Herrero-Otal, Maria (Universitat Autònoma de Barcelona - UAB) - Homs, Anna (Independent Researcher) - Martínez-Sevilla, Francisco (Universidad de Alcalá - UAH) - Junkmanns, Jürgen (Independent Researcher) - Palomo, Antoni - Piqué, Raquel (Universitat Autònoma de Barcelona - UAB)

Abstract format: Oral

The number of neolithic bows recovered in Europe has allowed remarkable knowledge about their production process and effectiveness. In contrast, very few examples of possible bowstrings are known. The bowstring is the part of the bow which transmits the force from the archer to the arrow, but our knowledge about its production, properties, efficiency and effectiveness in the Neolithic is scarce.

One outstanding example is the possible bowstring recovered in the Early Neolithic site of La Draga (Northeast Iberia, 5300-4900 cal BC). The site is located on the shore of Lake Banyoles, which has favoured the preservation of organic remains, including three bow fragments and a thin cord of nearly 2 m long potentially related to archery. This possible bowstring is a 2-ply cord made of twisted plant fibres. Cords of similar characteristics have been identified in other prehistoric sites, like Cueva de los Murciélagos (South Iberia, 5300-4500 cal BC), preserved in dry conditions. In this case, the state of fragmentation does not allow to confirm its relation to archery, but the site has also provided some examples of arrows which suggest archery was practiced by the people that used the cave.

The aim of this work is to present the experimental study of these two cords to determine their potential use as bowstrings. In this sense, we have replicated the bowstring considering the raw materials used, size, and production technique and have tested its elasticity, weight, thickness, and resistance.

3 WICKER AND THE SHIELD: A TALE OF A RARE IRON AGE FIND

Abstract author(s): Adams, Sophia (British Museum) - Beamish, Matthew (University of Leicester Archaeological Services)

Abstract format: Oral

Forget your shiny bronze covered Battersea shield, put away your edge trimmed hide shields, lay down your plywood Scutum, there's a new boss in town and it's made of wicker.

2300 years ago a shield was made from the bark of a willow tree. It ended up face down in the bottom of a wet pit where it remained until discovery by archaeologists in 2015. Only when the wicker boss was revealed did the purpose of this object become clear. This is a tale of learning through looking and creating through testing. Through the expertise, patience and dedication of many people we have come to know this unique find and question whether this single item is the representative of many. Could this be an effective shield? Did it see action? How difficult is it to make? How accessible were the materials? Was this the kind of shield available to most people?

As we followed the twists and turns in the bast cord stitches, untangled the repairs from the original features and separated the ancient damage from the degradation in the ground, we have formed a small community of shield bearers. Combining knowledge of ancient wood with skills in manipulating plant materials and obsessive attention to detail, we have experimented, recreated and re-recreated this bark shield. Features found on metal shields are here rendered in hazel, willow and lime. A poplar handle defined the curvature of the body and scored lines arranged the decoration. In preparing this incomplete object for display at the British Museum we have sought to fill in the gaps through our research and experiments. By telling this story we aim to make tangible the gestures and motions of the hands that created and carried this shield all those thousands of years ago.

4 THE RED MAN OF KILBERG. AN ANGERED GODDESS

Abstract author(s): Griffiths, Mark (Freelance)

Abstract format: Oral

The Red Man, an anthropomorphic figure dating from 1740 – 1531 BC, was discovered in 2003 in Kilberg, Co. Offaly after being shaved in half by a peat cutter. Seeing the Red Man for the first time my eye was immediately drawn to its beautiful serpentine twists. Three thousand years and the wounds inflicted by the peat cutters blade, hadn't dulled the figures sense of movement and grace. Categorized as male, I see in the Red Man's form far more likely to represent a woman.

Weeks later I found myself in Cork's Meitheal Mara boat yard looking upon a rod straight section of timber which had been selected, on my behalf, to remake the Red Man. As we, the Pallasboy Project, have found with so many of our creations sourcing wood with the correct character is a challenge. Timber today is cut straight and square from managed woodlands, twisted wood being commercially undesirable. For the next two days I battled with bronze axes to carve the same flow and life I'd seen in the original into this bland telegraph pole of timber. I failed miserably.

Many of these mysterious figures from prehistory are attributed to deities. If so, then I see the Red Woman as a goddess dancing, the twisted timber following her swaying movements in a celebration of what it is to be alive.

And as for my reproduction of this figure? Maybe it was just chance that one wild night a terrible storm whipped the river Lee into a boiling rage and tore our Red Man from the lashings that held it to the quayside, and dragged it deep into the Celtic Sea. Chance? or was the storm created by the indignation of a bronze age dancing goddess, affronted by this lifeless figure?

5 ENCHANTED GARMENTS: SPINNING TALES OF BOG BODIES

Abstract author(s): Giles, Melanie (Archaeology, School of Arts, Languages and Cultures) - Harvey, Isobel (University of Manchester)

Abstract format: Oral

In this paper, I will present the story of two Roman bog bodies – the man from Grewelthorpe moor (North Yorkshire, UK) and the woman from Amcotts moss (Lincolnshire, UK) – known largely through their footwear and associated textiles. I will explore the contrastive spun or twisted textiles associated with each, from the impressive 'insole' of the former, to the minute thread caught on the shoe of the latter. I will then explore what this can tell us about these the lives of these individuals and the world from which they came, before studying the curious power of the bog upon these textiles, and how it gave them new importance and even supernatural power, in the eyes of those who brought them back to light. Using an object itinerary approach, I will examine the contrastive history of human remains, shoes

and textiles, as a way of thinking critically about the relative value of these threads; from craft insight to forensic evidence to the particular aura of fragile substances whose preservation appears to defy time.

6 TWISTED REFLECTIONS OF LIFE: CREATING COMMUNITIES OF DEATH THROUGH IRON AGE ITALIC FUNERARY DRESS

Abstract author(s): Prew, George (National Museums Scotland; University of Glasgow)

Abstract format: Oral

The early Iron Age communities of Italy are known mainly through their funerary records. This paper is a reflection on my PhD research analysing Iron Age Italic communities through their funerary dress, applying material and sensory analyses to the evidence for published funerary dress assemblages from the cemeteries of Bazzano, Fossa, and Osteria dell'Osa to present new understandings of how the

dressed body was constructed and perceived in its mortuary setting. This paper discusses the merits and difficulties of an approach in which objects are classified in multiple ways to reconstruct how the dress might have been perceived and what that perception might have meant for the communities to which these individuals belonged, considering the utility of constructing a community from its perceptions of itself, as materialised in their creation of the corpse.

Osteological estimations of sex and age provide footholds by which to understand the people and the communities which the cemeteries served, but funerals are not simple events, they are multifaceted performances. The performance, appearance, and investiture of corpses provide multiple lenses through which to build a composite picture of the deceased, their constructed identity in the grave,

and the communities in which they lived, but what relation did these bear to the reality of these communities? This paper explores this question and presents findings from this approach to funerary study.

7 THE LIVED EXPERIENCE OF TEXTILE MAKING IN EARLY IRON AGE ITALY: CREATIVITY, CRAFT AND EMOTION

Abstract author(s): Toms, Judith (None)

Abstract format: Oral

This paper is an imaginative telling of the lived experience of textile making in Early Iron Age Italy, drawing on personal experience of spinning and weaving, creativity, the archaeological data, ethnography, and psychology. One of the twists in this tale is that textiles would have been ubiquitous but barely survive in the archaeological record. However, we do have textile tools buried in many tombs.

A picture emerges of a craft practiced daily by many women and children in the home. Everyone would have grown up with the sights, sounds and smells of textile making around them, as well as the textiles themselves - literally and metaphorically part of the fabric of their daily lives. The surviving textile tools help us imagine what the physical paraphernalia of the craft would have been, and how it would have been practiced.

There are many skills to be learned and this takes aptitude, focus and patience. When I was a young art student I immersed myself in spinning and weaving. The physical actions became engraved in my muscles and memories by long hours of attentive work and decades later are still vividly with me.

Much of the work could be communal, maybe aided and accompanied by chants, songs, stories. These could help remember and pass on the processes of making - setting up looms, weaving certain patterns. It is also a space to share myths and personal stories.

Skill and practice may confer some soft power on the textile makers, and must contribute to their sense of identity and membership of the community. There is also textile making as metaphor: continuously spinning and weaving the fabric of society into being. Holding society together by the creative act.

8 CRYSTAL MAZE: A TWISTY-TURNY JOURNEY THROUGH THE HISTORY OF AN UNUSUAL EARLY MEDIEVAL JAR

Abstract author(s): Davis, Mary - Goldberg, Martin (National Museums Scotland)

Abstract format: Oral

The Galloway Hoard, dating to c. AD 900, was found by metal detectorists in 2014 in Southwest Scotland. It is made up of a large number of Viking age arm rings and ingots, as well as many Anglo-Saxon objects. The majority of the Anglo-Saxon artefacts were contained within a lidded vessel and included brooches, beads, heirlooms and curios, some of which were several hundred years old when buried. There were also two textile bundles containing elaborate gold objects. One of these bundles - composed of leather, samite silk and linen contained a carved rock crystal jar, highly decorated with gold sheet, wire and filigree. The object is unique, and presents an interesting history of use, change

and elaboration dating back to the Roman period. This paper aims to tell the story of unravelling the origins of the object as well as examining the unusual intricately applied wound and twisted gold decoration.

9 RE-DISCOVERING HALLSTATT: SIR JOHN EVANS (1823-1908) AND THE HALLSTATT COLLECTION AT THE ASHMOLEAN MUSEUM

Abstract author(s): Nimura, Courtney (Ashmolean Museum of Art and Archaeology, University of Oxford) - Geitlinger, Timo (University of Zurich) - Foster, Jennifer (University of Oxford) - Roberts, Alison (Ashmolean Museum of Art and Archaeology, University of Oxford)

Abstract format: Oral

Just south of Salzburg in the salt-rich region of Austria lies the Late Bronze Age and Early Iron Age site at Hallstatt. The extensive cemetery of cremations and inhumations and the related salt mines form one of the most iconic archaeological sites in Europe, so much so that an entire period of later prehistory was named after it. The incredible collections of grave goods are mainly held in Austria, but a small group of just over a hundred objects can be found in the Ashmolean Museum of Art and Archaeology at the University of Oxford. This was due to the interest of avid collector and antiquarian Sir John Evans, who visited Hallstatt in 1866 and for a few years after helped fund the excavation in exchange for artefacts. A recent research project cataloguing and studying this assemblage has been ongoing for about two years, which also included two Masters projects. In this talk, we will tell the story of how these objects came to the Ashmolean through a series of letters by Evans, his friends, and colleagues. We will present the results of the Hallstatt research project, and one of the Masters projects specifically, including new scientific analyses, drawings, and ultra-high-resolution photographs.

572 THERE IS MORE THAT UNITES US, THAN DIVIDES US. TAKING STRATEGIC, COLLABORATIVE APPROACHES TO MANAGING AND DELIVERING ARCHAEOLOGY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Jones, Cara - Geary, Kate (Chartered Institute for Archaeologists) - Enlander, Rebecca (Historic Environment Division | Department for Communities) - Deevy, Mary (Transport Infrastructure Ireland) - Taloni, Maria (Ministry of Culture)

Session format: Round table

We know the results and outputs that we want – can strategic approaches help us get there?

Within the UK, the last decade has seen an increase in nationally co-ordinated archaeology and heritage themed strategies designed to take collaborative approaches to addressing long established pressures or problems. These initiatives have aimed to bring different sub-sectors together to develop innovative approaches to how we deliver archaeology and maximise the potential for public benefit, all while working with limited resources.

This discussion will draw on examples from Scotland, which has had an archaeology strategy in place since 2015, from Ireland where ‘Archaeology 2025’ was launched in 2017, from Northern Ireland, where work has commenced with ‘Archaeology 2030’ and the ‘21st Century Challenges’ initiative in England. We welcome other contributors to share additional thoughts or examples.

During this roundtable, we would like to explore

- Successful examples of strategy based archaeological work
- The mechanisms required to make strategic approaches a success
- The challenges of developing and delivering this work
- The sustainability and long-term outcomes of this work

This roundtable invites participants to give a short presentation on examples of strategy-based archaeology work which highlight how collaborative approaches to long term outcomes can enhance the outputs of our work. The presentations will be followed by a roundtable discussion which will explore the key questions highlighted above.

573 INTERDISCIPLINARY COPROLITE ANALYSIS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Dunseth, Zachary (Joukowsky Institute for Archaeology and the Ancient World, Brown University) - Fuks, Daniel (McDonald Institute for Archaeological Research, University of Cambridge) - Gur-Arieh, Shira (Institute for Pre- and Protohistoric Archaeology and Archaeology of the Roman Provinces, Ludwig Maximilian University Munich; The Leon Recanati Institute for Maritime Studies, Haifa University)

Session format: Regular session

Intact paleofeces, or coprolites, constitute a unique type of archaeological micro-context as short-lived time capsules of past animal or human diet and gut microbiomes. Analyses of their components may generate proxies for reconstructing paleoenvironment and paleoecologies, pastoral and agricultural activity, seasonality and mobility, foodways and health, among others. Coprolite studies are now conducted using a wide variety of methods, among them geoarchaeological (micromorphological, mineralogical, sedimentological), archaeobotanical (including palynological, carpological, phytolith), parasitological, spectroscopic (Raman, NIR, FTIR), biomolecular (genomic, proteomic, lipidomic), and isotopic (^{14}C , $\delta^{13}\text{C}$, $\delta^{15}\text{N}$). The aim of this session is to present both novel analytical techniques and combinations of traditional techniques in identifying and analyzing intact coprolites. Papers may concern feces of any animal and should ultimately relate to research questions relevant to archaeology. While all papers should have a strong methodological component, case studies demonstrating the value of multi-proxy and interdisciplinary approaches to coprolite analysis are very much encouraged.

ABSTRACTS

1 COMPOUND-SPECIFIC RADIOCARBON DATING OF FAECAL BIOMARKERS

Abstract author(s): Whelton, Helen - Knowles, Timothy (University of Bristol) - Shillito, Lisa-Marie (Newcastle University) - Blong, John (Washington State University) - Bull, Ian (University of Bristol)

Abstract format: Oral

Coprolites, or semi-fossilised faecal matter are archives of ancient lifestyles and are often utilised to provide a direct indication of when the producer of the faeces was in place at a particular time. Thus, radiocarbon dating of coprolites is a valuable tool in determining its age.

Most commonly, radiocarbon dating of coprolites is conducted using bulk analyses of the dried coprolite matter or macrofossils, such as plant or bone, extracted from within the coprolite matrix. Identification and characterisation of coprolites is then typically achieved through aDNA, lipid biomarkers, macrofossil, thin-section and microfossil analyses. Alternatively, its age is determined using material from within the same stratigraphic layer to establish an associated date. The main problem with this approach is possible movement of sediments and uncertainties in the differences of when the material was deposited which can lead to incorrect dating of coprolites.

More recently, the adoption of a compound-specific approach to radiocarbon dating has been developed to overcome the challenges faced with bulk ^{14}C analyses which occur from post-burial contamination and the complexity which arises from the analyses of chemically heterogeneous samples.

Herein, a compound-specific approach has been applied using preparative-GC to date well-established organic biomarkers, 5β -stanols. Results from the bulk ^{14}C analyses of macrofossils recovered from within the coprolite matrix fit within the expected age of the coprolite. Similarly, compound-specific ^{14}C dating for both standard (200 $\mu\text{g C}$) and small (50 $\mu\text{g C}$) sample sizes have ^{14}C dates consistent with those of the expected age. Consequently, compound-specific radiocarbon dating of 5β -stanols has been shown to provide an unequivocal link between the target compound and their source and importantly, the results have shown that smaller amount of C can reliably be used to determine the ^{14}C date of a coprolite.

2 UNVEILING THE SECRETS OF NEOLITHIC DIET AND HEALTH THROUGH ANALYSIS OF COPROLITES FROM SWIFTERBANT CULTURE SITES IN THE NETHERLANDS

Abstract author(s): Kubiak-Martens, Lucy - van der Linden, Marjolein (Biological Archaeology & Environmental Reconstruction, BIAx Consult) - Ngan-Tillard, Dominique (Faculty of Civil Engineering and Geosciences, Delft University of Technology) - Mackay, Helen (Department of Geography, Durham University) - Shillito, Lisa-Marie (School of History, Classics and Archaeology, Newcastle University) - Hardy, Karen (Department of Archaeology University of Glasgow) - J.T. Zeiler, Jørn (ArchaeoBone)

Abstract format: Oral

The study of coprolites from Early Neolithic (Swifterbant Culture) sites in the Netherlands was conducted to assess the diet and health of the Swifterbant Culture populations. The primary focus of the study was on the sites Swift-

erbant-S3 and -S4 dated to c. 4300-4000 cal BC. The analysis of coprolites was performed using diverse (some innovative) techniques, including faecal steroids, micro-CT scans, SEM images, animal bone, phytoliths, pollen, intestinal parasites, and starch granules. The results of the study highlighted dietary trends in food preparation in the Swifterbant culinary tradition, revealing a highly variable diet. The living conditions of the people, their dogs, and pigs, who shared a similar diet, were found to have resulted in intestinal parasite infections that affected their health. This interdisciplinary study, part of the Pre-Malta research series (based on sites excavated before 2007), provides a reconstruction of the Swifterbant community diet and sheds light on the health and lifestyle of the Swifterbant Culture populations.

3 **A COMPARISON OF DNA METABARCODING AND MACROREMAINS ANALYSIS FOR DIETARY RECONSTRUCTION USING COPROLITES FROM BONNEVILLE ESTATES ROCKSHELTER, NEVADA**

Abstract author(s): Johnson, Taryn (Texas A&M University) - Hockett, Bryan (Bureau of Land Management, Nevada State Office, Reno; University of Nevada) - Linderholm, Anna (Stockholm University; Texas A&M University)

Abstract format: Oral

This study compares DNA metabarcoding and macroremains analyses performed on ten coprolites from Bonneville Estates Rockshelter, Nevada (USA). While the dietary information from both the genetic and macroscopic remains conform to previous knowledge about subsistence practices from the site, the two methods show minimal overlap in identified floral and faunal taxa. The findings suggest that if genetic data are bolstered with a targeted comparative library, they may detect more digestible foods and medicinal floras than macroremains analysis, while macroremains are likely to include less digestible but identifiable dietary taxa along with evidence of food processing methods. The two methods can further be used in conjunction to aid identifications and interpretation of their combined data. Overall, the lack of overlap and different types of data gained from DNA metabarcoding and macroremains analysis show the methods are best done together whenever possible, and coprolite analysis should be approached with multiproxy analyses in mind to ensure that large amounts of data are not lost.

4 **POO-DUNNIT? TESTING THE LIMITS OF MULTIPROXY ANALYSES OF WATERLOGGED COPROLITES**

Abstract author(s): Green, Eleanor (University of York; Natural History Museum) - Pressless, Sam - Lisowski, Mik - Beckett, Lydia - Fogarty, George - González Carretero, Lara - Hagan, Richard - Hendy, Jessica (University of York) - Speller, Camilla (University of British Columbia) - Wales, Nathan (University of York)

Abstract format: Oral

Mechanisms of faecal preservation vary based on geography and environment. Many coprolites recovered from Northern Europe are found in waterlogged sediments and have been preserved via partial mineralisation. Compared to the desiccated coprolites more commonly recovered in the Americas, few biomolecular investigations have been undertaken on partially mineralised coprolites. Here, the preservation of DNA, proteins and amino acids within coprolites recovered primarily from two early medieval waterlogged sites (Coppergate, England (York Archaeological Trust) and Moynagh Lough, Ireland (Dr. Michael Potterton) is investigated in order to determine the source of the coprolites at these sites.

Upon their initial excavation, these samples were assumed to be human-derived, but a macroscopic inspection of the samples suggested deposition by a carnivore. To investigate this further the coprolites were halved and dissected. A sample of the coprolite matrix was taken from one half, homogenised, and separated into subsamples for DNA and proteomic analyses. The extracted DNA confirms that the depositing species in most cases was *Canis familiaris*. Whilst DNA is preserved in the coprolite samples, accessing the protein preserved in this matrix is proving more challenging. Nonetheless, ZooMS analysis undertaken on bone fragments embedded within the coprolites has demonstrated that collagen is preserved and the fragments have been molecularly identified mainly as large mammals. The dissected bones were also examined using zooarchaeological methods. This evidence shows that some bone fragments can be refit, suggesting dogs were eating butchered cuts of meat that contained large pieces of bones - perhaps bony cuts considered unsuitable for human consumption. These investigations demonstrate how biomolecular analyses combined with macroscopic and microscopic techniques can be used to successfully investigate the dietary resources consumed by coprolite depositors at waterlogged sites in Northern Europe.

5 MULTI-PROXY ARCHAEOBOTANICAL AND GEOARCHAEOLOGICAL ANALYSIS OF SHEEP/GOAT DUNG PELLETS FROM THE NEGEV DESERT

Abstract author(s): Fuks, Daniel (McDonald Institute for Archaeological Research, University of Cambridge) - Langgut, Dafna (Department of Archaeology and Ancient Near Eastern Cultures, Laboratory of Archaeobotany and Ancient Environments, Institute of Archaeology & The Steinhardt Museum of Natural History, Tel Aviv University) - Dunseth, Zachary (Joukowsky Institute for Archaeology and the Ancient World, Brown University)

Abstract format: Oral

Recent multi-proxy archaeobotanical and geoarchaeological research on sheep/goat dung pellets from an Early Islamic period midden at the site of Shivta in the Negev Highlands desert, Israel, identified seasonality, grazing range and foddering. Continued research on the same context offers further insights into the species used for foddering. Expanding the multi-proxy analysis of dung pellets to include preservation by desiccation at other Early Islamic Negev sites (Nahal Omer, Avdat), we present preliminary results from analyses of pollen, phytoliths, seeds, and mineralogy. We discuss their potential for seasonal reconstruction and livestock diet, as well as possibilities for integrating spectroscopic, isotopic and biomolecular analyses. Data thus retrieved may be collated into a multi-site and multi-period database of archaeological dung pellets containing information on herbivore diets, local vegetation, seasonality, herbivore species/sex and microbiomes. An approach that maximizes information encapsulated in archaeological dung can significantly improve understandings of ancient agropastoral economy, ecology and environment.

6 BENEFITS AND CHALLENGES OF INTEGRATING DUNG SPHERULITE, COPROLITE, AND ARCHAEOBOTANICAL ANALYSES: EXAMPLES FROM SW ASIA

Abstract author(s): Smith, Alexia (University of Connecticut)

Abstract format: Oral

Over the past decade, the number of studies examining ancient faeces has grown tremendously, exploring a diverse range of topics including animal and human diet, landscape use, construction methods, fuel economies and more. Many of these issues overlap with questions asked by archaeobotanists, suggesting that studies of ancient plants and faeces are highly complementary. Seeds consumed by many domesticated animals can be excreted intact and become preserved and deposited on archaeological sites when dung fuel is burned. Archaeobotanists working in SW Asia have long debated whether dung fuel (reflecting fuel use and animal diet) or crop-processing debris (associated with human diet) represent the dominant depositional pathway for ancient plant remains on sites. This difference of opinion can sometimes result in very different interpretations of the same set of remains. Both models rely largely on complex ecological models, making it difficult to resolve the disagreement using plant data alone. Analyses of dung spherulites within flotation dust can help provide empirical information on the presence of dung on a sample-by-sample basis, informing our understanding of sample origin with greater resolution, thereby placing interpretations of both food and fuel on a firmer footing. This paper considers the potential for dung studies within archaeobotany through a series of studies integrating plant and spherulite data from Abu Hureyra (Epipalaeolithic/Neolithic), Tell Zeidan (Ubaid/Late Chalcolithic), and Tell Leilan (Bronze Age) in Syria. Both the benefits and challenges of such an approach are considered. The technique can easily be applied to archival collections, providing a broad scale view of dung deposition across sites, but should be applied critically.

A. MINIMALLY DESTRUCTIVE RADIOCARBON DATING OF CAPRINE DUNG

Abstract author(s): O'Neill-Munro, Niamh (Queen's University Belfast) - Fuks, Daniel (University of Cambridge) - Reimer, Paula (Queen's University Belfast)

Abstract format: Poster

Archaeological dung pellets are time capsules of ancient herbivore diets and gut flora, informing on past agropastoral activity, ecology and animal health. Improving multi-proxy approaches is key to maximizing this finite archaeological resource. Through experiments with standard pre-treatments used in radiocarbon dating, we address a fundamental problem in maximal multi-proxy analysis: How to chronometrically date individual caprine pellets while conserving as much as possible for additional analyses? We applied acid-alkali-acid (AAA) or acid-only pre-treatments to thirty-six samples of ancient and recent sheep/goat dung pellets from sites in the Negev desert, Israel, measuring weight-loss due to pre-treatment. Shavings of outer surfaces and remaining inner pellets of four pairs were dated and compared. We found that (i) sample-specific factors affect pre-treatment survivability, including preservation quality and initial sample size; (ii) given sufficient start weight, AAA can be used to pre-treat sheep/goat coprolites; (iii) 100mg appeared a desirable minimum sample weight before pre-treatment; and (iv) shavings of coprolites' outer surface produced radiocarbon dates equivalent to dates obtained from inner coprolites. Whereas standard coprolite analysis protocols discard shavings removed from outer surfaces to avoid contamination, our findings indicate their efficacy for radiocarbon dating. This offers an important addition to workflows for multi-proxy coprolite analysis.

IT TAKES A VILLAGE: INTERDISCIPLINARY BIOARCHAEOLOGICAL RESEARCH ON THE ROLE OF CHILDREN IN THE PAST

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Saupe, Tina (Estonian Biocentre, Institute of Genomics, University of Tartu) - Fulminante, Francesca (Bristol University; Oxford University; University Roma Tre; Hanse-WissenschaftsKolleg 2022-23) - Mittnik, Alissa (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology) - Morrone, Alessandra (Institute of History and Archaeology, Department of Archaeology, University of Tartu)

Session format: Regular session

In the last decades, the advances of the so-called Third Science Revolution in Archaeology have brought forth numerous studies which provided a new understanding of how people lived in the past. Continued technological improvements and an increased effort to integrate the different methods derived from the natural sciences with a careful archaeological contextualization shifted the focus from broader questions of human mobility and cultural transitions towards high-resolution studies of the local connectedness of people within one group or between groups.

The development of methodologies to detect fine-grained genetic relatedness has given new impetus to the study of kinship, supplementing information on biological aspects to come to a holistic interpretation of how social belonging was constructed by past communities and shaped their social dynamics and organisation. In bioarchaeological investigations into the sociobiological and demographic characteristics of past societies, children have often received special attention as research on the communities' youngest members allows scientists insights, e.g. into the past communities' health status, (breast)-feeding practices and diet, post-marital residence patterns, as well as kinship ties. Moreover, rather than just being considered unformed adults, their life stage might situate children within specific roles in their community, which can be further modulated by gender, status, health and geographic or ancestral origin.

We invite papers that examine the role(s) children occupied within their communities and wider society which can be indirectly inferred through burial treatment, cross-sectional and incremental stable isotope analysis, biological relatedness, individual mobility, pathologies, etc. through a variety of disciplines. Contributions covering any time period or geographic region are welcome, but we encourage studies that take an interdisciplinary lens to questions of childhood in the past and specifically interrogate the attitudes towards and treatment of children within communities of defined archaeological cultures, and contrast and compare these between life stages and cultures.

ABSTRACTS

1 THE BALTIC KINDERGARTEN: BREASTFEEDING AND WEANING IN MEDIEVAL AND EARLY MODERN ESTONIA THROUGH THE LENS OF STABLE ISOTOPE ANALYSIS

Abstract author(s): Morrone, Alessandra (University of Tartu)

Abstract format: Oral

Investigating infant diet and stress through stable isotope analysis provides direct insights into the lives of vulnerable population groups in the past. Little is known about childhood diet in medieval and early modern Livonia, and even less regarding the effects of the numerous famines, wars, and epidemics of the time on the non-adult population.

This presentation introduces a new research project aimed at exploring non-adult diet in urban/rural Estonian communities during the 12th-18th centuries AD, focusing on feeding practices and physiological stress. The impact of socio-economic circumstances on early childhood nutrition, affecting the development and overall survival of young children, represents the core of this research.

In our recently published study, cross-sectional analysis was carried out on bone collagen from 176 individuals between the fetal and the 7-15 age categories from four urban/rural South-Estonian cemeteries via EA-IRMS for $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$. Results indicated that South-Estonian children had a staple terrestrial C3 diet integrated with animal proteins. Significant divergences were observed between urban and rural sites and among rural subgroups. Breastfeeding was likely practiced for 1-2 years, introducing supplementary foods at around 1 year of age. The weaning process was probably concluded around the age of 3. The isotopic values of older children were comparable to the adults, indicating their diets became similar after weaning, when they started working and obtained a more mature status. Furthermore, the large number of perinates allowed exploring the impact of maternal physiological stress, malnutrition and metabolic disease on their isotopic values.

In addition to this preliminary data, results of the ongoing research on seven further Estonian sites will be revealed, adding to the picture the first incremental data regarding infant feeding practices in medieval and early modern Livonia.

2 THE “PLACE” OF CHILDREN IN AN ITALIAN COPPER AGE COMMUNITY: AN INTERDISCIPLINARY APPROACH

Abstract author(s): Bernardini, Sara (Aix Marseille Univ, CNRS, Minist Culture, LAMPEA; Department of Environmental Biology, Sapienza University of Rome) - Goude, Gwenaëlle (Aix Marseille Univ, CNRS, Minist Culture, LAMPEA) - Sayle, Kerry (Scottish Universities Environmental Research Centre, Scottish Enterprise Technology Park) - Gauthier, Caroline - Douville, Eric (Laboratoire des Sciences du Climat et de l'Environnement, LSCE/IPSL, UMR CEA-CNRS-UVSQ, Université Paris-Saclay) - Aranguren, Biancamaria (Soprintendenza Archeologica, Belle Arti e Paesaggio della Toscana) - Del Bove, Antonietta (Universitat Rovira i Virgili, Departament d'Història de l'Art; Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA) - Tafuri, Mary Anne (Department of Environmental Biology, Sapienza University of Rome)

Abstract format: Oral

The study of childhood and its aspects in past communities could be overlooked due to the limited archaeological and biological information usually available. Here we present the results of an investigation into the role of children within an Italian Copper Age (4th – 3rd millennia BCE) population by undertaking an interdisciplinary study on adult human remains from a funerary cave, Grotta Spinosa, in Central Italy. Multi-isotope ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, $\delta^{34}\text{S}$ and $87\text{Sr}/86\text{Sr}$) and multi-tissue analysis (dentine, enamel, and bone) has been carried out on two adult individuals to investigate their life-histories. High-resolution sampling allowed us to take a look at specific events that occurred during their early life. Notably, the frequentation of different places during childhood emerged. The intra-life isotopic reconstruction, together with data from the rest of the group analysed, and from existing literature, has been contextualised with the archaeological and biological data available. The interdisciplinary approach enabled us to propose an age interval (ca. 10–12 y. o.) in which the children of these communities may have been introduced to everyday adult life (i.e. displacements and tasks). The application of this exploratory study on a wider sample broadens the possibility to trace back specific social and cultural practices of past populations.

3 EXPLORING THE RELATIONSHIP BETWEEN BREASTFEEDING DURATION, LIFE EXPECTANCY, AND DEGREE OF URBANIZATION THROUGH MORTAAR AND WARN MODELLING

Abstract author(s): Fulminante, Francesca (Hanse-WissenschaftsKolleg 2022-23; Bristol and Oxford University; University Roma Tre) - Müller Schessel, Nils (Kiel University) - Salesse, Kevin (Department of Anthropology, Faculty of Science, Masaryk University) - Tsutaya, Takumi (The Graduate University for Advanced Studies, Kanagawa) - Miller, Katherine (Independent Researcher) - Alt, Kurt W. (Center of Natural and Cultural Human History, Danube Private University; Integrative Prähistorische und Naturwissenschaftliche Archäologie, Basel University) - Meller, Harald (Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt) - Nicklisch, Nicole (Integrative Prähistorische und Naturwissenschaftliche Archäologie, Basel University) - Oelze, Vicky M. (Anthropology Department, University of California)

Abstract format: Oral

Recent research suggests that breastfeeding can have significant impacts on the wellbeing and prosperity of individuals and communities. In modern societies, a strong correlation has been shown between breastfeeding and healthier growth and more effective cognitive development, which ultimately results in higher levels of education and socio-economic status.

In this study, we test the correlations of breastfeeding duration with life expectancy at birth and degree of urbanization in different archaeological populations (Çayönü Tepesi = Neolithic, Early Urban; Derenburg and Karsdorf = Neolithic, Pre-urban; Newark Bay = multi-period, proto-urban/urban) to explore the impact of breastfeeding on adults' health and assess the economic benefits of breastfeeding in the past. Our aim is to, first, determine precise estimates for life expectancy at birth and breastfeeding duration through the R packages *mortar* (a programme to build lifetables tailored for archaeological populations) and *WARN* (a model to assess more precise breastfeeding and weaning times, taking into account previous studies of isotopes turnover rates in sub-adult), respectively, and second, investigate the relationship between life expectancy at birth, breastfeeding duration, and the degree of urbanisation.

Our findings suggest a possible correlation between prolonged breastfeeding (within a threshold of maximum about 2/4 yrs), increased life expectancy, and more advanced urbanization. We can associate longer breastfeeding duration within the urban setting and higher life expectancy at birth. This would suggest that once surviving childhood, individuals who were breastfed longer in urban environments may have had longer lifespans. Further exploration into using the *mortAAR* and *WARN* analytical approaches in more archaeological contexts will shed more light on our preliminary observations.

4 **A SHORT AND SICKLY LIFE. MULTI-INDICATORS ANALYSIS OF AN INFANT FROM A LATE ANTIQUE ITALIAN BURIAL (ARTENA, 5TH CENT. CE)**

Abstract author(s): Cecconi, Viola (Alma Mater Studiorum, Università di Bologna) - Nava, Alessia (Geochronology and Isotope Geochemistry Laboratory, Institute of Geological Sciences, Polish Academy of Science) - Lugli, Federico (Geochemistry Lab, Università di Modena e Reggio Emilia) - Mittnik, Alissa (Department of Human Evolutionary Biology, Harvard University; Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology) - Sawyer, Susanna (Department of Evolutionary Anthropology, University of Vienna; Human Evolution and Archaeological Sciences - HEAS, University of Vienna) - Gadeyne, Jan (Temple University Rome Campus) - Brouillard, Cécile (INRAP Hauts-de-France) - Pinhasi, Ron (Department of Evolutionary Anthropology, University of Vienna) - Reich, David (Department of Human Evolutionary Biology, Harvard University; Department of Genetics, Harvard Medical School; Broad Institute of Harvard and MIT; Max Planck-Harvard Research Center for the Archaeoscience of the Ancient Mediterranean) - Sperduti, Alessandra (io di Bioarcheologia, Museo delle Civiltà; Dip. Asia, Africa e Mediterraneo, Università degli Studi di Napoli "L'Orientale")

Abstract format: Oral

The use of advanced technologies in the study of children from archaeological contexts provides information that can shed light on their social role, life-course, mortality, and funerary treatment. Early life stress events and pathological conditions can also inform on maternal-infant life histories during pregnancy and breastfeeding. Among acquired diseases, neonatal/infant scurvy, caused by a prolonged dietary deficiency of vitamin C, may open a window into the mother's nutritional condition or indicate cases of compelled early weaning associated with inadequate alternative food sources.

The late antique burials from "Piano della Civita di Artena" provide evidence regarding several aspects concerning the living conditions and funeral treatment of children, as reflected in the fact that those who died within their first year of life were buried in a separate cluster from the rest of the individuals. The ongoing aDNA analysis is exploring the genetic compositions and biological ties between adult and non-adult burials.

Here we focus on the case of a well-preserved infant (04.Ar.60004) showing diffuse abnormal cortical porosity and subperiosteal new bone formation, consistent with a diagnosis of neonatal scurvy. Macroscopic examination of bones was integrated by enamel peptide analysis for sex determination and dental histomorphometry for age at death determination and detection and timing of stressful events.

5 **THE ROLE OF CHILDCARE IN GENETIC TRANSFORMATIONS AND MARITAL PRACTICES IN THE CENTRAL EUROPEAN EARLY BRONZE AGE**

Abstract author(s): Stockhammer, Philipp (LMU Munich; MPI for Evolutionary Anthropology, Leipzig)

Abstract format: Oral

Within the last decade, archaeogenetic analyses have unraveled several major transformations of the Early Bronze Age European gene pools and enabled us to understand the biological dimension behind collective burials or whole cemeteries shedding light on marital practices and residential rules. In my lecture, I will ask about the social dimension which enabled the successful spread of the "Steppe signature" during the 3rd millennium and the reason for the enormous genetic impact these migrants had on the local gene pools in many parts of Europe. Therefore, I will compare different co-existing systems of social organization, marital practices and child raising during the 3rd millennium and early 2nd millennium in Central Europe and their correlation with and relevance for genetic transformations. I will argue that practices of child raising had a crucial impact on survival rates of children which again was decisive for long-term genetic transformations. In this context, I will differentiate between kin-group and network-based systems in the social organization of childcare and their respective potentials to show resilience in times of changes.

6 **EXPLORING FOSTERAGE AS METHOD FOR KINSHIP BUILDING: A CASE STUDY OF THE NORDIC BRONZE AGE GINDERUP WOMAN FROM THISTED, DENMARK**

Abstract author(s): Reiter, Samantha - Frei, Karin (National Museum of Denmark)

Abstract format: Oral

We present new data obtained from our case study of the Ginderup Woman, a Nordic Bronze Age female interred in Thisted, Denmark who was found wearing what seems to have been a corded skirt.

In recent years, studies of the mobility/ies of young persons (particularly women) in Bronze Age Europe have provided a large amount of comparative data. Nevertheless, traditional interpretations revolve around marriage alliances as the cause for female mobility (and, conversely, raiding/trading as a cause for male mobility). In this paper, we juxtapose the new data from Ginderup Woman with that of other mobility studies conducted on contemporaneous young persons.

In so doing, we explore the possibility that the movements of young male and female individuals may also have been linked to kinship building through fosterage.

We conducted strontium isotope analyses of the enamel from the second and third molars from Ginderup elite female grave (Grave A). Our results revealed that the strontium isotope ratios obtained from the young female yielded a ratio that falls within the local baseline (M2) and one that falls outside the baseline (M3). Our results suggest that the Ginderup Woman was probably of local origin, but that she also was mobile during her life. The strontium isotope ratio of the M3 suggests that, at least at some point in her later adolescence early adulthood, she might have spent a significant amount of time outside the boundaries of modern day Denmark (excluding the island of Bornholm).

We tie the sum of these data together by reflecting on historical and prehistorical examples of fosterage practices and new thinking regarding developmental psychology and the influence of life stage and environment on the formation of kinship bonds.

7 GENETIC ANALYSIS OF EARLY BRONZE AGE CHILD BURIALS IN LOWER AUSTRIA

Abstract author(s): Furtwängler, Anja (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology) - Rebay-Salisbury, Katharina (Austrian Archaeological Institute, Austrian Academy of Sciences; Department of Prehistoric and Historical Archaeology, University of Vienna) - Kanz, Fabian (Department of Forensic Medicine, Medical University Vienna) - Ringbauer, Harald (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology; Department of Human Evolutionary Biology, Harvard University) - Krause, Johannes (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology) - Stockhammer, Philipp (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology; Institute for Pre- and Protohistoric Archaeology and Archaeology of the Roman Provinces, Ludwig Maximilian University) - Mittnik, Alissa (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology; Department of Human Evolutionary Biology, Harvard University)

Abstract format: Oral

The burial features of the neighboring Early Bronze Age Únětice and Unterwölbling groups in Lower Austria provide great opportunities to study prehistoric kinship structures. The numerous burials at the Únětice sites of Drasenhofen, Schleinbach, Unterhautzthal, and the Unterwölbling site of Pottenbrunn contain female and male individuals of all age classes, including a high number of children.

It is therefore no surprise that we find many 1st and 2nd-degree relations between the individuals in the dataset of genomic data generated by genome-wide targeted enrichment and were able to reconstruct biological family trees spanning three generations. Of special interest are burials in which young children are buried with one or more adult individuals. Despite the placement of the bodies suggesting close familiarity, the children are not biologically related to the adults from the same grave in the majority of these cases. This fact can be used for considerations about the value of children to society at that time in this region.

At the sites of Schleinbach and Unterhautzthal, some individuals, including children, were placed in pits instead of regular graves. Comparing the patterns of family connections expressed in the way people were buried together with genetic data, as well as biological connections of the remains from the pits to the ones from regular graves provides the opportunity to investigate social stratification and its implications for the children in these groups.

Overall, the examples of the Early Bronze Age graves from Lower Austria add to our understanding of social practices and the role of biology for social belonging in prehistory.

8 GENETIC SEX DETERMINATION AS AN INSTRUMENT FOR THE STUDY OF NON-ADULTS IN BIOARCHAEOLOGY

Abstract author(s): Saupe, Tina (Jakobsson Lab, Human Evolution, Department of Organismal Biology, Evolutionary Biology Centre, Uppsala University; Estonian Biocentre, Institute of Genomics, University of Tartu) - Thompson, Jess (McDonald Institute for Archaeological Research, University of Cambridge) - Bonucci, Biancamaria (Estonian Biocentre, Institute of Genomics, University of Tartu) - Panella, Sofia (Department of Environmental Biology and Mediterranean bioArchaeological Research Advances - MAReA - centre, Sapienza University of Rome) - Morrone, Alessandra (Department of Archaeology, Institute of History and Archaeology, University of Tartu) - Tafuri, Mary Anne (Department of Environmental Biology and Mediterranean bioArchaeological Research Advances - MAReA - centre, Sapienza University of Rome) - Scheib, Christiana (Estonian Biocentre, Institute of Genomics, University of Tartu; St John's College) - Robb, John (Department of Archaeology, University of Cambridge)

Abstract format: Oral

Recent works have focused on multidisciplinary approaches combining bioarchaeology and genetics to investigate the human past. For example, some studies have linked the migration patterns of non-local females with those of local individuals, as established through stable isotope analysis, and have shown that their estimated ancestral components

differ in some cases respectively. These works infer a male sex bias, or social practices of exogamy and patrilocality, in some prehistoric European societies. Often, however, the origins and ancestry of non-adult individuals are overlooked. Here, we explore the need for multidisciplinary studies to better understand past societies and explain why the rapidly expanding field of ancient human genetics must incorporate non-adults to a greater degree.

We collected bioarchaeological (osteological sex and age-at-death) and genetic data of ~50 possible individuals from three archaeological sites in the Italian Peninsula dating to the Chalcolithic-Bronze Age transition. We extracted DNA from human skeletal elements (mostly petrous bones and teeth) and built double-index libraries at the dedicated ancient DNA laboratory at the Institute of Genomics, Tartu (Estonia). After raw data processing of the sequenced libraries, we determined the genetic sex using published available tools and compared the results to the bioarchaeological records.

In many cases, the bioarchaeological data were insufficient to estimate sex, as the human remains at two sites were often found to be disarticulated. In combination, the genetic and bioarchaeological data, alongside archaeological context and social interpretations of these periods, allow us to refine our interpretations of the construction of past societies. This is especially the case for assessing the representation of male and female individuals and the social value of children in the past.

9 ARCHAEOGENETIC INSIGHTS INTO MARITAL PRACTICES AND FAMILY STRUCTURES OF THE BRONZE AGE AEGEAN

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Abstract format: Oral

The Bronze Age was a time of cultural, technological and demographic transformation in the Aegean, characterized by increased interconnectivity within a Mediterranean network of exchange. Utilizing ancient DNA data allows us to examine how changes and deviations in the material culture correspond with shifts in genetic ancestry, thus tracing cultural contacts with instances of large-scale and individual mobility and admixture. At a social level, estimating relatedness between individuals sheds light on family structures, household composition, burial practices and inheritance and marriage conventions.

Skourtanioti et al. have recently shown that despite the genetic flux and diversity seen across the Bronze Age Aegean, a possible common shared practice in the region was cousin marriage, which emphasizes the importance these societies placed on biological relatedness, and demonstrates one way in which cultural norms could shape life courses from a young age. The significance of biological kin is also evident from the finding of close relatives within burial contexts. While funerary practices in the Aegean were strikingly diverse, it was long assumed that children were commonly not buried alongside the adults of the community. However, a meticulous archaeoethanological approach suggests that this observation could partially be due to taphonomic processes and past excavation methods rather than ancient cultural practices and promises a more consistent inclusion of this important group in future studies.

In this paper we present case studies, such as Mygdalia in the Peloponnese and Sissi in Crete, in which the study of infants and children, in particular, provides deeper insight into the construction of social belonging, marital and mortuary customs, and the attitudes and beliefs surrounding birth, infancy, and death.

References:

- E. Skourtanioti et al., Ancient DNA reveals admixture history and endogamy in the prehistoric Aegean. *Nature Ecology & Evolution* 7, 290-303 (2023).

10 INFANT SKELETAL REMAINS FROM IBERIAN SETTLEMENTS: AN APPROACH TO BIRTH MORTALITY IN ANTIQUITY

Abstract author(s): Sandoval Ávila, Carolina - Martirosyan, Ani - Cuesta-Aguirre, Daniel - Jordana, Xavier - Nociarová, Dominika - Santos, Cristina - Malgosa, Assumpció (Grup de Recerca en Antropologia Biològica; Departament de Biologia Animal, Biologia Vegetal i Ecologia; Universitat Autònoma de Barcelona)

Abstract format: Oral

The Iberian peoples lived in the Mediterranean region of the Iberian Peninsula between the 7th and 1st centuries BC. Their funerary practice was cremation, but inhumations of perinatal individuals have been found in domestic and production areas, reflecting a differential ritual pattern. Forehead with the possibility of natural death, infanticide has often been considered a response to such findings, as has the hypothesis of sacrifice, considering the existence of a

possible selection of sex, specifically of female individuals. However, these theories have yet to be proven. The main objective of this work is to determine, through an integrated approach of methodologies, if there is a specific pattern of child mortality that can explain these burials.

The skeletal remains come from 6 sites of Iberian culture in Catalonia (Spain). A total of 73 children were analyzed from different morphological perspectives combined with approaches based on dental histology and paleogenetics, which allowed us to establish the biological profile of the individuals.

Age estimation results from morphological studies showed 4 extremely preterm (<28 weeks of gestation), 40 perinatal (from 28 to 40 weeks of gestation), 7 neonatal (delivery up to 28 postnatal days), 21 post-neonatal (>28 postnatal days), and 1 undiagnosed individual. In addition, the presence of the neonatal line in the teeth of 39 infants indicated that 20 individuals survived birth and 15 did not, while four cannot be determined. Regarding sex determination from genetic data, the results show 31 males, 37 females, and two indeterminate individuals. These results do not indicate age or sex selection and are congruent with a natural mortality pattern.

These findings provide scientific data supporting the hypothesis of family rituals for the natural death of the youngest children while discarding the hypotheses of infanticide or sacrifice as usual practices of the Iberian peoples.

11 UNITED IN GRIEF. FAMILY TIES AND FUNERARY BEHAVIOR IN LATE ANTIQUE PELTUINUM (ITALY)

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Abstract format: Oral

In the complex and diversified phenomenon of associated burials of dogs and humans across time and space, the city of Peltuinum provides two relevant funerary contexts. Two disused structures in the city (seven shafts in the theater and a partially destroyed tower) yielded distinct funerary evidence suggesting different interpretative scenarios. The osteological analyses led to the recognition of at least 84 human fetuses and newborns, and three older children in the theater. In addition, the faunal remains indicate the presence of 68 dogs and dozens of other domestic animals, including horses as signifying elements of the atypical funerary ritual. Conversely, the tower yielded highly commingled and fragmented remains of at least 35 individuals of all ages in secondary deposition, associated with 12 dogs and one wolf.

In order to better understand the atypical funerary behavior and demographic dynamics of the Peltuinum community we carried out an interdisciplinary analysis integrating archeological and osteological data with radiocarbon and aDNA analysis. The paleogenetic study included 46 petrous bones from the theater and 10 petrous bones from the tower.

The results for the theater indicate a non-significant difference in the number of buried males and females. We also detect the presence of 4 pairs of full siblings as well as many more distantly related pairs, the largest kinship complex encompassing 19 individuals. Related individuals are not gathered together within shafts, suggesting a time-spaced use of the site, perceived as a common space of burial and remembrance shared by local families. In addition, we find a case of Trisomy 21 and evidence of sporadic consanguinity within the community. Genetic relationships also extend to the tower that includes five individuals who are probable ancestors of the infants of the theater, suggesting Peltuinum was a close-knit community.

UNCOVERING THE LIVES OF THE NONADULT POPULATION AT THE LATE AVAR BURIAL SITE IN NUŠTAR, CROATIA: AN INTERDISCIPLINARY APPROACH

Abstract author(s): Zagorc, Brina - Blanz, Magdalena (Vienna Institute for Archaeological Science - VIAS, University of Vienna; Human Evolution and Archaeological Sciences - HEAS, University of Vienna) - Rapan Papeša, Anita - Vulić, Hrvoje (Municipal Museum Vinkovci) - Premužić, Zrinka (Independent researcher) - Trbojević Vukičević, Tajana (Faculty of Veterinary Medicine, University of Zagreb) - Reich, David (Department of Human Evolutionary Biology, Harvard University; Howard Hughes Medical Institute, Harvard Medical School; Broad Institute of Harvard and MIT) - Ivanova Bieg, Maria (Vienna Institute for Archaeological Science - VIAS, University of Vienna; Human Evolution and Archaeological Sciences - HEAS, University of Vienna) - Pinhasi, Ron (Department of Evolutionary Anthropology, University of Vienna; Human Evolution and Archaeological Sciences - HEAS, University of Vienna)

Abstract format: Oral

Excavations at the archaeological site of Nuštar, Eastern Croatia, have revealed 196 skeletal graves from the Late Avar period (710-810 AD), offering valuable insights into the lives of the buried population. This paper focuses on the study of the nonadults, combining a wide range of methods, including paleogenetic and palaeodietary analyses, in order to obtain a comprehensive understanding of their lives. Next Generation DNA sequencing allows us to accurately determine the biological sex of the individuals, explore ancestry and different degrees of kinship, while carbon and nitrogen stable isotope ratio analyses provide information on their diets and weaning ages. By combining these data with osteological and paleopathological findings, we can study the relationships between diet, disease, preferential sex-related treatment, and mortality rates and gain a deeper understanding of the lives of these individuals.

We analysed twenty female and sixteen male nonadults and adults through Next Generation Sequencing data with established ancient DNA pipelines and protocols, and fifty-five nonadults and adults using stable isotope ratios (bone collagen $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$, including animal bones for the baseline reference) to examine questions of kinship, ancestry, and molecular sex, and dietary patterns, providing a comprehensive picture of the upbringing and overall health of the buried population. This interdisciplinary approach provides a unique and unparalleled glimpse into the past, shedding light on the lives of the nonadult and subsequently adult population at Nuštar.

575 RADIOCARBON DATING AND ARCHAEOLOGY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Blaauw, Maarten (Queen's University Belfast) - Heaton, Tim (University of Leeds) - Manning, Sturt (Cornell University)

Session format: Regular session

Chronologies are essential for most archaeological studies, and over the past seven decades radiocarbon dating has become one of the most popular dating tools in the archaeological research. From the first archaeological radiocarbon dates in the 1950s, radiocarbon dating techniques and methods have undergone huge changes, including the development of radiocarbon dating of ever smaller samples using accelerator mass spectrometry, advances in radiocarbon dating and calibration, and numerical techniques to incorporate multiple dates together with additional information such as stratigraphical ordering within archaeological excavations, or additional types of relative or absolute dating information such as dendrochronology, tephra layers or archaeological information. This session will invite talks and posters on the history of radiocarbon dating and calibration (including single-year calibration data), method development including pretreatment and dating of a range of materials, quality control, lab intercomparisons, treatment of multiple dating sources, and environmental or archaeological case studies with a focus on radiocarbon dating.

ABSTRACTS

1 40 YEARS OF RADIOCARBON IN ARCHAEOLOGY – A VIEW FROM DANEBURY HILLFORT

Abstract author(s): Hamilton, Derek (SUERC, University of Glasgow)

Abstract format: Oral

The application of radiocarbon dating to archaeological problems has undergone many developments in the past four decades. In these decades, a technological shift in how radiocarbon is measured was also taking place, with accelerator mass spectrometry (AMS) becoming more commonplace and affordable moving into the 90s, and the dominant technique by the close of the 20th century. Also, as computing moved from the mainframe to the desktop, archaeologists began to be able to calibrate their dates (and others) using the program known as CALIB. This program not only produced date ranges, but also introduced archaeologists to the complex probability density functions that underlie their dates, and which would come to form the 'standardized likelihoods' in today's Bayesian chronological models.

Finally, with the advent of radiocarbon dating by AMS, archaeologists no longer needed to rely on bulk samples for their dates, which enabled them much greater choice across the site.

The Iron Age Danebury hillfort, in central southern Britain, was excavated over a 20-year period (1969–88) and then reinvestigated in the 2010s. The archaeological remains from this site have been: subjected to sampling strategies using bulk remains and single-entities; dated via radiometric (70 dates) and AMS methods (120 dates); and had the dates interpreted following methods that predate the introduction of Bayesian statistics to chronology building as well as multiple times since ‘Bayesian modeling’ in archaeology began. This talk will discuss the 40 years of change and their implications for how we understand this archaeological site.

2 STABLE ISOTOPE AND 14C ANALYSES OF THE NOMADIC POPULATIONS OF ALTAI IN THE 1ST MIL. BC – 1ST MIL. AD

Abstract author(s): Svyatko, Svetlana - Reimer, Paula (Queens University Belfast) - Seregin, Nikolai (-) - Papin, Dmitriy (-)

Abstract format: Oral

Located at the ancient crossroads between Central and North Asia, Altai was the principal region through which pre-historic Eurasian steppe populations and cultures contacted and exchanged with China. This small and isolated area was the centre of intensive cultural development, including the emergence of nomadic economies in the LBA/EIA. Pastoral “nomadic” communities actually had mixed and diverse economies, herding strategies, social complexity and mobility. In this context, Altai is a unique land in the Eurasian steppe for studying the variability of the economies and adaptations, as the area encompasses a patchwork of diverse environments (steppe, forest-steppe, lowland plains, mountains and foothills), which have different potentials for stockbreeding, crop cultivation etc. Due to the harsh continental climate and altitudinal zonation, migrants into Altai had to seriously restructure their lifestyles to be able to adapt. This resulted in people of the same cultural traditions living in a variety of geographical and environmental conditions, which is particularly useful when exploring adaptations. During the entire EIA, Altai demonstrated several co-existing types of nomadic economies, specific to ecological niches: steppe, forest-steppe and mountains.

We aim to explore the emergence of nomadism and the dynamics of development of its various forms. Through 14C dating and stable carbon, nitrogen, sulphur, oxygen and hydrogen isotope analysis of human and animal remains, we attempt to reconstruct the ancient economies, in particular the consumption of millet and fish, and to detect possible first generation migrants in the region. The research will allow more accurate interpretations on the emergence and development of different cultures and economies in various geographical zones (steppe, forest-steppe, mountains), as well as verify the general sequence of the cultures.

3 ESTABLISHING AN ABSOLUTE CHRONOLOGY FOR AYIOS VASILEIOS NORTH CEMETERY

Abstract author(s): Erdil, Pinar (Groningen Institute of Archaeology, University of Groningen; Centre for Isotope Research, University of Groningen) - Dee, Michael - Kuitens, Margot (Centre for Isotope Research, University of Groningen) - Moutafi, Ioanna (The M.H. Wiener Laboratory for Archaeological Science, American School of Classical Studies at Athens) - Hachtmann, Vasco (Institute of Prehistory, Protohistory and Near-Eastern Archaeology, University of Heidelberg) - Voutsaki, Sofia (Groningen Institute of Archaeology, University of Groningen)

Abstract format: Oral

The North Cemetery is the early Mycenaean cemetery on the site of Ayios Vasileios, which later develops into the palatial centre of Laconia, southern Greece. The scarcity of material culture and the limited stratigraphic information has affected the establishment of a spatiotemporal framework between different graves and burials. For this reason, we applied various statistical models to the available data in order to get a more detailed view of the chronology of this important cemetery. The approach to our analysis comprised two steps. First, we created a radiocarbon-based chronology for southern Greece by collating data from archaeological sites across the region. In all, a large set of legacy radiocarbon data covering the Middle Helladic and the Late Helladic periods was collected from a total of 18 different sites. We then built a simple Bayesian model to obtain approximate start dates for the ceramic-based phases conventionally employed in this region. Second, we present 56 new radiocarbon dates on samples from 24 different graves at Ayios Vasileios North Cemetery. We compared the distribution of these new dates to the aforementioned regional model. Our analysis independently confirms the conclusions reached by the study of the pottery and the mortuary practices, that the cemetery was in use continuously from MH III to LH IIB, then later sporadically from LH IIIA to LH IIIB for infant burials only.

4 THE CHRONO-STRATIGRAPHY OF NERJA CAVE IN LIGHT OF BAYESIAN MODELLING

Abstract author(s): Extrem Membrado, Vanessa - Garcia Puchol, Oreto (PREMEDOC Departament de Prehistòria, Arqueologia i Història Antiga, Universitat de València) - Pardo-Gordó, Salvador (Departamento de Geografía e Historia, Universidad de La Laguna) - Jordá Pardo, Jesús F. (Departamento de Prehistoria y Arqueología, Universidad Nacional de Educación a Distancia - UNED) - Aura Tortosa, J. Emili (PREMEDOC Departament de Prehistòria, Arqueologia i Història Antiga, Universitat de València)

Abstract format: Oral

The Nerja Cave Malaga (Spain) is an important archaeological site with a prehistoric stratigraphic sequence that ranges from the Upper Palaeolithic to the Chalcolithic. Its stratigraphy constitutes one of the western Mediterranean's most important archaeological and palaeobiological sequences, and the research has provided more than 200 radiocarbon datings. In this work, we will review and discuss the methodological requirements (technical, chemical-physical, and archaeological) of the radiocarbon corpus of Nerja. Thus, the analytical method, including pre-treatment and quality control, lab intercomparisons, and multiple dating sources treatment, among other questions will be reviewed because it is essential to build an accurate chrono-stratigraphy model.

Bayesian statistics have been applied using the OxCal v4.4 software and Chronomodel 2.0 software according to a phases model. Likewise, we have been able to determine the differences between programs and if the choice of software can condition the model. This has allowed us to improve the chronological resolution from the end of the Upper Palaeolithic until the beginning of the Holocene. In a nutshell, this corresponds to the technocomplexes of the Gravettian, Solutrean, Magdalenian, Epipaleolithic, Mesolithic, and early Neolithic.

5 FIRST ABSOLUTE DATING OF A NEOLITHIC SITE IN THE BALKANS: ANNUAL RADIOCARBON AND THE TREE-RING CHRONOLOGIES FROM DISPILIO (GREECE)

Abstract author(s): Maczkowski, Andrej (Institute of Archaeological Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Francuz, John (Institute of Archaeological Sciences, University of Bern) - Giagkoulis, Tryfon - Kotsakis, Kostas (History and Archaeology, Aristotle University of Thessaloniki) - Ballmer, Ariane (-) - Bolliger, Matthias - Reich, Johannes (Institute of Archaeological Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern; Archaeological Service of the Canton of Bern) - Hostettler, Marco (Institute of Archaeological Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Szidat, Sönke (Department of Chemistry, Biochemistry and Pharmaceutical Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Hafner, Albert (Institute of Archaeological Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern)

Abstract format: Oral

In some regions of Europe, dendrochronology has played a central role in the absolute dating of prehistoric periods. The absolute dating of several-millennia-old prehistoric sites has been possible thanks to the decades-long efforts for collecting, measuring, and cross-dating large amounts of archaeological and subfossil wood samples.

On the other hand, although there are tree-ring chronologies covering the last two millennia, no tree-ring chronologies from the Balkans extend deep into prehistory. Recent systematic sampling of archaeological wood in the region enabled the construction of centuries-long "floating" tree-ring chronologies for several wetland sites, among them the Mid/Late Neolithic phase of the waterlogged site of Dispilio, Greece. The main tree-ring chronologies, based on oak and juniper wood, are more than 300 years-long and were wiggle-matched to the second half of the 6th millennium BC. Over 220 vertical construction wood elements were cross-dated, which uncovered the intra-site spatio-temporal development of the settlement with an annual resolution.

A recently discovered radiocarbon (Miyake) event in absolutely dated tree-ring chronologies from different parts of the world revealed a sharp spike of atmospheric radiocarbon level in 5259 BC. Annual radiocarbon measurements of the Dispilio tree-ring chronologies could be matched against the reference data of this new Miyake event. It was therefore possible to absolutely date the site without millennia-long tree-ring chronologies extending to the present. Dispilio represents the first absolutely dated Neolithic site in the wider Eastern Mediterranean region.

6 WHERE ARE THE PROBLEMS? THE MISMATCH BETWEEN RADIOCARBON DATES AND ARCHAEOLOGICAL DATA BASED ON CASE STUDIES FROM SLOVENIA

Abstract author(s): Kramberger, Bine (Institute for the protection of cultural heritage of Slovenia)

Abstract format: Oral

In this paper I discuss several archaeological case studies in which the results of radiocarbon dating are incompatible with the archaeological data. The selected cases range from Prehistory to the Mediaeval period and originate from different contexts, such as Late Neolithic and Early Copper age settlements, a Late Bronze Age cemetery, and Early

Medieval pits. They include analyses of samples from various materials: charred human bones, charcoal, food residues, animal bones, charred seeds etc. The 14C analyses were performed by different laboratories using AMS.

The vast majority of radiocarbon dates for Slovenia have been obtained and published in the last 20 years. In most cases, the analysed samples consisted (unfortunately) of charcoal, and were obtained from excavations that were part of the National Motorway Construction Programme, which covers the entire country. The results of the associated excavations have been published systematically by the Institute for the Protection of Cultural Heritage of Slovenia.

The results of this study indicate that the use of radiocarbon dating would need to be approached more carefully in Slovenian archaeology. Issues such as the possibility of “old wood effect”, “uncorrected reservoir effect”, as well as several contextual aspects need to be taken into more serious consideration when selecting samples for dating and interpreting the results. Last but not least, cross-comparisons of different data sources (radiocarbon dating, dendro-chronology, stratigraphy, typo-chronology) have yielded useful results, and having multiple dates for a single-event feature enables us on the one hand to recognise obvious outliers and on the other to obtain more precise dates.

7 PROJECT RADIOCARBON DIGITAL REPOSITORY: SAFEGUARDING ARCHAEOLOGICAL RADIOCARBON DATA FROM THE ISLANDS OF IRELAND AND BRITAIN

Abstract author(s): Hannah, Emma - Carlin, Neil (University College Dublin) - Griffiths, Seren - Gaydarska, Biserka (Manchester Metropolitan University) - Evans, Tim (Archaeology Data Service)

Abstract format: Oral

The preservation of archaeological sites and cultural materials is a central tenet of the archaeological discipline. The radiocarbon (14C) measurements derived from these are of immense intellectual value and it is vital that they too are curated and safeguarded. These data help order the events of the human past, whether at single-site level or through big-data-style, data-driven analyses from multiple sites.

Project Radiocarbon is a new open access, transnational digital repository which aims to safeguard the value of the vast numbers of 14C dates from across the islands of Ireland and Britain. This project aims to ensure that measurements are recorded in a single, searchable repository; but also that data are interoperable and findable across international research traditions. The project team, based in Manchester Metropolitan University and University College Dublin, is working in partnership with archaeologists, historic environment experts, data management, and 14C specialists across six different historic environment jurisdictions in the Republic of Ireland and the United Kingdom.

This paper discusses the challenges we have encountered, particularly those related to classifying archaeological data and accommodating divergences in different classification systems, and the methods used to overcome these. It also presents the results of a preliminary big-data analysis on dating practices in the Republic of Ireland, specifically the patterning associated with dating strategies used on national road schemes in recent decades.

8 RADIOCARBON DATING, CALIBRATION AND AGE-MODELLING USING R

Abstract author(s): Blaauw, Maarten (Queen's University Belfast)

Abstract format: Oral

Over the past decades, the open-source statistical software R has become popular in many research communities, including among archaeologists. One of the advantages of free, open-source approaches, is that users are allowed to look ‘under the hood’, for example to check in detail how radiocarbon dates are calibrated and subsequently used to produce chronologies for archaeological sites. Users can also propose enhancements to methods, which can then be incorporated in the software. Additionally, many types of data analysis can be performed all within one single software package.

A range of R packages related to radiocarbon dating will be shown, including 1) ‘rintcal’ for radiocarbon calibration, translations between different radiocarbon-related scales (e.g., 14C age, cal BP, BC/AD, F14C, pMC), calculating impacts of contamination on observed radiocarbon ages, visualisation of the IntCal and other calibration curves and their underlying data, 2) ‘coffee’ for radiocarbon-dated trees or sedimentary/archaeological sequences, 3) ‘clam’ for classical age-depth models, 4) ‘rbacon’ for Bayesian age-depth models and 5) ‘rplum’ for 210Pb-based chronologies.

9 FROM ORDER TO NARRATIVE: CHALLENGING LINEARITY WITH BAYESIAN CHRONOLOGIES

Abstract author(s): Passerini, Annapaola (Cornell University)

Abstract format: Oral

Radiocarbon dating has profoundly changed archaeological practice by re-introducing absolute time well beyond periods documented by written history. Following advances in calibration, AMS technology, and statistical modeling, radiocarbon dating has reached levels of accuracy and precision that have fundamentally revolutionized not just the quality of “hard” temporal data, but also the kinds of stories that archaeologists may be able to tell. Despite the po-

tential of radiocarbon to render more complex narratives of the deep past, its application in archaeology is often subordinated to the justification of predetermined chrono-typological paradigms. This results in circular reasoning that exacerbates the hyper-linearity of traditional archaeological chronologies, which may distort our sense of cultural and social change by conflating the speed and quality of human temporality with the duration of constructed typologies. This paper leverages the theoretical and methodological possibilities of Bayesian chronological modeling to investigate social temporality during the Early Bronze Age in the South Caucasus. In this approach, chrono-typologies are not maintained as the ultimate temporal unit to be dated, but rather as an inherited temporal dimension (i.e. past in the past) that intersects with radiocarbon-based events. By combining multiple lines of evidence, the paper brings the organic life dated by radiocarbon back into the center of the chronological picture to reshape narratives of the Early Bronze Age.

10 **OBTAINING ROBUST “DATES-AS-DATA” INFERENCE FROM THE CALIBRATION OF MULTIPLE RADIOCARBON DETERMINATIONS: A STATISTICALLY RIGOROUS ALTERNATIVE TO SPDS**

Abstract author(s): Heaton, Tim - Al-assam, Sara (University of Leeds) - Bronk Ramsey, Christopher (University of Oxford)

Abstract format: Oral

The recent explosion in the availability of dates within archaeological science has ushered in a data science revolution. Computational analyses of large collated sets of dates have the potential to provide unprecedented inference on our past, on rates of change, and on population dynamics. It is essential however that the methods underpinning these “big-data” analyses are rigorous and robust.

This concern is particularly relevant for radiocarbon dating, the archaeological method of choice for dating the last 55,000 years. Here,

the density of dates is frequently used as a proxy to reflect patterns of occupation across time (Rick, 1987). The popularity of this approach is driven by recent advances in measurement techniques that have increased the number of potentially dateable radiocarbon samples on any archaeological site into the thousands. However, their need for calibration introduces considerable, and complex, uncertainties in our dates that must be incorporated into any inference.

In this talk we will describe a novel and statistically rigorous tool for the analysis and summarisation of calendar age information provided by multiple radiocarbon determinations. This provides an essential alternative to the incoherent method of summed probability distributions (SPDs) currently widely used by the community.

11 **PROBLEMATIC CHRONOLOGIES - OFFSETS, CONTAMINATION, AND DIFFICULT MATERIAL**

Abstract author(s): Keaveney, Evelyn - Barrett, Gerard - Allen, Kerry (Queen’s University Belfast)

Abstract format: Oral

The Ramped Pyrooxidation (RPO) lab at the 14CHRONO Centre at Queen’s has been in operation since 2019. RPO allows separation of multiple fractions for carbon source attribution, and can provide more accurate chronologies. RPO incrementally heats bulk material in the absence of O₂. Gas evolved during RPO is oxidised to CO₂ and cryogenically isolated for graphitisation. As such it can be used for a myriad of material with problematic chronologies.

Radiocarbon analyses can often be limited based on the sample character, source, context of retrieval, and potential conservation. For example, radiocarbon measurements of the consumers of a freshwater diet may be impacted by the Freshwater Reservoir Offset. The magnitude of the age offset, which can be hundreds of years, is related to alkalinity, variability (spatial and temporal) is evident due to terrestrial inputs and the volume of terrestrial inputs are sometimes related to trophic status.

Chronology of aquatic material can also be impacted by this offset – how do you date a bulk material with no terrestrial macrofossils? Some material may have intrusive contamination from its burial environment – what material is being dated? What about contamination from museum conservation – how can we be sure we are dating the artefact and not the preservative? What about dating unusual material – how can we be sure that the date is accurate? This presentation will give an overview of the results from this lab and discuss the potential solutions provided by RPO.

A. RADIOCARBON DATING OF AN EARLY MEDIEVAL SETTLEMENT FROM THE LOWER DANUBE AREA (TÂRGȘORU VECHI, PRAHOVA COUNTY, ROMANIA)

Abstract author(s): Hila, Tudor - Ciupercă, Bogdan - Ȑiscă, Cătălin - Anton, Alin (Prahova District Museum of History and Archaeology)

Abstract format: Poster

Into Romanian Plain, west of Târgșoru Vechi village and close to the Prahova River the investigations carried out between the years 2019-2022, revealed an archaeological site extending over several hectares, generally dated between the eight and tenth centuries A.D.

It should be mentioned that this site (Târgșoru Vechi – Balastieră), is one of the largest settlements dating from the end of the first millennium A.D. investigated so far in Wallachia, being identified a number of 53 dwellings, 18 possible annexes, five freestanding fireplaces, three hoards of iron implements and weapons, six possible water wells, 16 burials, ten ceramic kilns, and tens of other archaeological features with various purposes.

Considering that radiocarbon dating is almost non-existent for the early medieval period in the area north of the Lower Danube, was decided to send for analyses a large number of samples (animal and human bones) collected from different archaeological features. The analyses were carried out at 1 MV Tandetron™ accelerator from “Horia Hulubei” National Institute for Physics and Nuclear Engineering (IFIN-HH).

After calendar ages were obtained, using the IntCal20 calibration curve, it is possible now, corroborating radiocarbon dates with the typology of pottery and other types of artefacts to highlight the following issues: 1) the chronological phases of the site; 2) to trace the settlement/ settlements mobility in time; 3) to relate the inhumation graves (otherwise impossible to date since they had no funerary inventory) with the early medieval settlement.

Finally, it is worth mentioning that for the scrutinized area and period the radiocarbon dating is one of the few techniques that can be employed to refine the sites chronological framework. Without any absolute dates, almost no written sources and scarce other artefacts than pottery one can only to assign the sites largely between the 8th and 10th century A.D.

B. CHRONOLOGY OF THE FINAL ENEOLITHIC IN CENTRAL EUROPE – REGIONAL DIFFERENCES

Abstract author(s): Jarosz, Pawel (Institute of Archaeology and Ethnology Polish Academy of Sciences) - Szczepanek, Anita (Institute of Archaeology and Ethnology Polish Academy of Sciences; Department of Anatomy Collegium Medicum Jagiellonian University) - Horváthová, Eva (Archeologický ústav SAV) - Włodarczak, Piotr (Institute of Archaeology and Ethnology Polish Academy of Sciences)

Abstract format: Poster

The aim of the study is to demonstrate the regional differences in radiocarbon dating of selected communities of the Corded Ware Culture in Central Europe. This culture played a crucial role in shaping the cultural picture in the 3rd millennium BC. In our study we made an attempt to arrange the chronometry based on a larger series of available age determinations. Of particular importance for chronometric studies of the Corded Ware culture are the dates obtained in recent years using AMS technology, allowing for a standard error of ± 30 to 35 years. The comparative analysis concerns selected macroregions with this culture settlement: the Małopolska Upland, the Carpathian Foothills, the Subcarpathian area, the Sokal Ridge and Eastern Slovakia Uplands as well as Lowlands. The conducted chronometric analysis, and especially the synchronization of cultural phenomena in the distinguished macroregions, demonstrates that despite their notable homogeneity, the Final Eneolithic Corded Ware culture communities exhibit a number of local differences. They are visible especially in elements of the funeral rite. Generally the first evidences of this culture barrows occurred in the range 2900–2300 BC then around 2550 BC the funeral rite changed and niche graves dominated near in all these microregions until 2300 BC i.e., to the early phase of the Mierzanowice culture.

The presented investigations were financed by National Science Centre Poland, NCN 2015/19/B/HS3/02149 and NCN 2020/37/B/HS3/03816.

578 BETWEEN THE EAST AND THE WEST. ÇATALHÖYÜK' CONTRIBUTION TO THE EUROPEAN NEOLITHIC AND EUROPEAN ARCHAEOLOGICAL THOUGHT

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Türkcan, Ali Umut (Anadolu University; Çatalhöyük Research Project) - Marciniak, Arkadiusz (Adam Mickiewicz University; Çatalhöyük Research Project)

Session format: Discussion session

60 years of research at Neolithic Period Anatolian Site Çatalhöyük have had an unprecedented impact on European archaeology, probably on World archaeology. The early years of Mellaart Era yielded spectacular discoveries

that have yet to be surpassed as the iconic Fat Lady figurines, paintings, and reliefs on the walls of elaborated shrines showed a different and more developed phase of the Neolithic universe and triggered the development of different theories pertaining to egalitarian and urban society. These included the birth of matriarchy proposed by Gimbutas and Mellaart, “Obsidian Theory” advocated by Jacobsen, and the birth of Indoeuropean language systems pursued by Renfrew, to mention a few. The Çatalhöyük Research Project through time marked the transition in a way from modernism to postmodernism theories in many debates. It is manifested by numerous theoretical and epistemic underpinnings explicitly laid down by Ian Hodder, including theory of domus and history houses, the idea of microhistory, the role of religion, as well as the reflexivity and multivocality of contextual archaeology.

The purpose of this session is aiming to examine many questions and debate on research agenda as the impact of distinct and influential schools of thought on European archaeology by Çatalhöyük studies. How has it progressed beyond the simple collection of a wide range of rich data or periodical documentation via Internet and databases so far? How far has the Çatalhöyük settlement influenced the character of European Neolithic? The session will also present current work at Çatalhöyük, which is deeply rooted in the history of settlement research and the rapidly changing modes of archaeology practice today.

ABSTRACTS

1 ÇATALHÖYÜK AND THE BALKAN NEOLITHIC: WHY SO DIFFERENT?

Abstract author(s): Demoule, Jean Paul (Université de Paris I - Sorbonne)

Abstract format: Oral

The major difference between the wealth of material culture (and of interpretations) uncovered at Çatalhöyük by various archaeological projects and the more modest traits of the Balkan peninsular Neolithic calls for much thought. The reality of migration from the Near East, clearly shown by pottery decoration and figurines, has been confirmed by genetics. On the other hand, the differences still require explanation, particularly as material culture, notably pottery shape and decoration, becomes increasingly impoverished as one moves westwards across Europe. While the primitive matriarchy of Marija Gimbutas can hardly be defended, the fact that European Neolithic communities strove to remain small until they were blocked by the Atlantic ocean is certainly an aspect that needs to be taken into consideration. The role of the indigenous European population is also to take in consideration, not only from a genetic point of view, but also looking at the quite irregular progression of the colonization process.

2 THE ÇATALHÖYÜK AND THE NEOLITHIC IN THE BALKANS AND CENTRAL EUROPE. PREHISTORIC PAST AND ARCHAEOLOGICAL PRESENT

Abstract author(s): Nowak, Marek (Jagiellonian University in Kraków)

Abstract format: Oral

The many years of research at the Çatalhöyük site have resulted in a series of data, interpretations, theories, and debates that have fundamentally shaped our perception of early Neolithic communities not only in central Anatolia but, without much exaggeration, in the western part of the Old World. These studies and their results not only have contributed to the knowledge of the crystallisation and early development of Neolithic groupings but have also had a considerable impact on the agenda of archaeological investigations. These dual influences become less and less significant as one moves away from central Anatolia, which is not necessarily justified. This presentation will analyse the issue in relation to the Balkan zone and, especially, central Europe. Of interest will be the confrontation of the real and the potential relevance of data, interpretations and theories related to Çatalhöyük (e.g., the fusion-fission settlement model; collective vs. autonomous social and ritual structures; history and social houses) for the state of knowledge and the way in which Neolithic archaeology has been practised in these territories. The cultural transformations suggested from the data, interpretations, and theories will be the subject of special attention. Such transformations are evident throughout the history of the Çatalhöyük settlement, especially those that occurred after the mid-seventh millennium BC. Thanks to the exceptional level of interdisciplinarity of more recent investigations and the painstaking assembling of their results, it has been possible to generate a narrative depicting these changes that is close to real life. It will be considered whether their regularities, which may also have resulted in the spread of Neolithic formation, can also be seen in the Early Neolithic of the aforementioned European territories, and - using analogies from Çatalhöyük - better understood.

3 THE ARRHYTHMIC NEOLITHIC. THE ÇATALHÖYÜK TRAJECTORY OF DEVELOPMENT AND ITS RECURRENCE IN SOUTHEASTERN AND CENTRAL EUROPE

Abstract author(s): Marciniak, Arkadiusz (Adam Mickiewicz University)

Abstract format: Oral

The emergence of the Neolithic and its subsequent progression has an arrhythmic form. It involved a sequence of short bursts of intense developments followed by lengthy periods of stabilization. It was followed by the rapid standstill of these highly developed communities, their abrupt disappearance and subsequent transformation into new forms of considerably lower potential.

The objectives of the paper are threefold: (1) to outline the trajectory of the development of Çatalhöyük and the region as the primal manifestation of the arrhythmic progression of the Neolithic, (2) to draw parallels between the Çatalhöyük sequence and the mode of emergence and subsequent development of the incipient Neolithic of southwestern Asia as well as southeastern and central Europe, and (3) to scrutinize the causes and mechanisms of the demise of the incipient form of Neolithic in all three regions and determine the nature of the vulnerability of this first burst of development.

4 THE END OF ÇATALHÖYÜK AND THE EUROPEAN NEOLITHIC

Abstract author(s): Biehl, Peter F (University of California Santa Cruz) - Anvari, Jana (Cologne University) - Rosenstock, Eva (Bonn University)

Abstract format: Oral

This paper links the settlement at the Çatalhöyük West Mound (ca. 6,100 cal BC – 5,500 cal BC) – attributed to the so-called Early Chalcolithic in Anatolian periodization – to the well-established stratigraphy of its Early Neolithic and Late Neolithic predecessor the Çatalhöyük East Mound (ca. 7,000 cal BC – 5,900 cal BC). It scrutinizes the process of cultural, social, economic and symbolic transition between the 7th and 6th millennia in Central Anatolia as well as the palaeo-environmental changes in Anatolia and Europe, in order to examine, for example, how humans responded to the climate change that occurred during the “8.2k cal BP climate event.” The time from around 6,100 cal BC to the end of Çatalhöyük around 5,500 cal offers a microcosm that helps us unlock some of the key questions surrounding this time period. Coinciding with a major leap in the expansion of the Neolithic, the shift from the East to the West Mound provides an exceptional opportunity to compare human responses to cultural and environmental change on both a micro- and a macro-scale.

600 INTERPRETING CERAMIC TECHNICAL DATA: CHALLENGES IN APPROACHING AND DECIPHERING PREHISTORIC SOCIETIES THROUGH THEIR POTTERY PRODUCTION

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Derenne, Eve (Vienna Institute for Archaeological Science, University of Vienna) - Dubois, Roxane (Aegean Interdisciplinary Studies - AEGIS, UCLouvain)

Session format: Regular session

Ceramic technology has proven to be an excellent means of making communities and their traditions visible. Yet, literature on pottery technology mainly focuses on methodological aspects and study protocols that allow the collection of technical data on archaeological pottery. Interpretations regarding the social and cultural spheres are often based solely on stylistic and consumption aspects, completely leaving aside manufacturing processes.

Following this observation, this session aims to gather contributions on the prehistory of any geographic area that include a broader reflection on the challenges of interpreting pottery technology in social terms. Regional studies with a diachronic framework are particularly encouraged.

Therefore, we welcome contributions that offer:

- (1) case studies at regional or supra-regional scales that focus on questions pertaining to broader interpretations: mobility-induced shifts, local evolution of traditions, technical transfers and cultural contacts, continuity of practice, etc.
- (2) methodological reflections on interpreting ceramic technical data, answering questions such as: what is the “bare minimum” for technical pottery studies? At which point is the data insufficient for arriving at coherent interpretations? How can we collect, homogenize, and interpret uneven technical data, e.g., when working with a mix of published and newly produced data, with varied technical criteria, the study of different parts of the chaîne opératoire, and widely different analytical tools (from the simple macroscopic observation to the archaeometric analysis)? What is the future of pottery technology? What innovative ways could we develop to combine and interpret different datasets?

(3) theoretical reflections: what are the advantages and drawbacks of applying concepts stemming from other scientific fields to interpret technical data, such as (but not limited to) situated learning theory (e.g., communities, constellations, and genealogies of practice), or network theory (e.g., connectivity, mobility, and interaction).

ABSTRACTS

1 BRIDGING PREHISTORIC POTTERY TRADITIONS AND SOCIO-CULTURAL NARRATIVES: LAUNCHING A DISCUSSION ON CERAMIC TECHNOLOGICAL STUDIES

Abstract author(s): Dubois, Roxane (Aegean Interdisciplinary Studies - AEGIS - UCLouvain) - Derenne, Eve (Vienna Institute for Archaeological Science - University of Vienna)

Abstract format: Oral

This introductory talk aims at provoking a discussion on several themes related to the technological study of prehistoric ceramic assemblages. It stems from a realisation that proposing a complete pottery study inevitably involves dealing with technology. This recording of technical data can be done at different levels of the chaîne opératoire (sources, recipes, forming, decoration, firing) with different goals in mind (provenance, development and dissemination of technologies, technical functionalities, use) and using different methods (macro- and microscopic observations, archaeometric analysis, experimentation).

Nonetheless, this selective approach is not as straightforward as presented in pottery analysis manuals, making it even more difficult to produce comparative studies and to reach coherent interpretations. However, does this mean that collecting technical data on 'not ideal', highly fragmented, and/or uneven assemblages is useless?

We aim to discuss the choice and adaptation of protocols/methods and their adequation to the objectives and the possibilities offered by each assemblage.

- What is the 'bare minimum' for technical pottery studies? At which point is the data insufficient for arriving at coherent interpretations?
- How can we collect, homogenize, and interpret uneven technical data, e.g., when working with a mix of published and newly produced data, with varied criteria, the study of different parts of the chaîne opératoire, and widely different analytical tools?
- How to ensure the produced data can be easily compared and combined in future studies?
- How can we reconcile the lack of chronological resolution often associated with prehistoric periods and the rapid evolution of techniques and traditions at the scale of the human group?

On a theoretical level, the challenges are equally as complex: how can we move from observations to their interpretation in terms of social significance? What interpretative tools can make sense of technological choices in the development of narratives about prehistoric societies?

2 TOWARDS A HISTORY OF KNOWLEDGE: OUTLINING A NEW PERSPECTIVE ON PREHISTORIC CERAMIC TECHNOLOGY

Abstract author(s): Kroon, Erik (Leiden University, Faculty of Archaeology)

Abstract format: Oral

Studies of prehistoric ceramic technology find themselves between Scylla and Charybdis. On the one hand, ethnography shows ceramic technology relates to flexible, individual learning trajectories, and not the social groups archaeologists attempt to reconstruct. On the other hand, the coarse resolution of the archaeological record does not allow us to discern anything beyond group level. How to navigate between these two extremes?

This paper outlines an approach to ceramic technology which looks at long-term patterns in the transmission of knowledge. The basis of the approach is a novel method to compare ceramic technology. This method combines network analysis and probability theory. Rather than asking whether the ceramic technology of two groups differs, the comparison checks whether the variability in chaînes opératoires associated with one group might also give rise to that seen in another group. As such, it enables archaeologists to work with ceramic assemblages as the aggregate effect of countless individual learning trajectories in the past.

The paper showcases the method by applying it to the interaction between indigenous Funnel Beaker West and migrating Corded Ware communities in the Netherlands during the third millennium BC. Is there a radical break in ceramic technology between these communities, as some predict on the basis of aDNA evidence? Or, as others have argued, a more gradual transition? The case study illustrates the unique contribution a long-term perspective on knowledge transmission can make to larger debates in Prehistory, and beyond.

3 UNDERSTANDING THE PRODUCTION PROCESS OF PREHISTORIC POTTERY THROUGH ARCHAEOLOGICAL EXPERIMENTATION: A METHODOLOGICAL APPROACH TO THE STUDY OF SURFACE TRACES

Abstract author(s): Díaz-Bonilla, Sara (Universitat Autònoma de Barcelona) - Clemente-Conte, Ignacio (IMF-CSIC) - Gassiot-Ballbè, Ermengol (Universitat Autònoma de Barcelona) - Ibañez-Estévez, Juan José (IMF-CSIC) - Mazzucco, Niccolò (Dipartimento di Civiltà e Forme del Sapere Dipartimento di Civiltà e Forme del Sapere, Pisa University)

Abstract format: Oral

The creation of experimental programmes in archaeology makes it possible to better understand the production process of prehistoric pottery. It is an excellent way to obtain information about the economic activities of ancient societies. At the same time, it also contributes to the development of new ways of analysing pottery at the macro- and microscopical level.

Surface production traces have rarely been approached from a global and experimental perspective. Therefore, I propose an experimental program about surface treatment on pottery and the used toolkit (pebble, flint spatula, pottery spatula, shell spatula, linen rag, grass, leather, etc.), where the main variable being explored is the category of pottery: different tools generate differentiable traces.

The catalogue is composed of visual information and qualitative data about traces and surface appearance. Likewise, to test whether the visual differences observed between the various surface treatments can be quantitatively measured, confocal microscopy has been tested. This method has proved to be an accurate and feasible technique for surface microtexture measurement.

The potential of the proposed methodology for traceological and textural analysis of surface treatment is highlighted. The possibility of discriminating different production techniques through surface traces opens new perspectives for the study of prehistoric pottery.

4 BEYOND QUANTIFICATION FOR QUANTIFICATION'S SAKE: EXPLORING SOCIOCULTURAL INTERPRETATIONS OF CERAMIC STANDARDIZATION IN THE JAPANESE ARCHIPELAGO

Abstract author(s): Loftus, James (Japan Society for the Promotion of Science - JSPS; Faculty of Social and Cultural Studies, Kyushu University)

Abstract format: Oral

Japanese archaeology has an unfortunate reputation for fixating on finely-tuned ceramic chronologies based on visually assessed, irreproducible methods. On the other hand, recent trends in big-data quantification have some archaeologists scratching their heads, asking, “Where’s the archaeology?” This perceived fissure between “traditional” and “modern” exposes a deeper problem: the entrenchment of outdated notions of what it means to be a “data” scholar or a “theory” scholar with little room in-between. However, improvements in quantified shape analysis, combined with an increase in the availability of ethnoarchaeological case studies, allow us to move past binaries into holistic, sociocultural interpretations based on reproducible methods. This study seeks to utilize data about pottery shape, based on modern geometric morphometric and 3D technologies, to explore changes in social learning strategies and idiosyncratic style during a period of agricultural transition. The agricultural transition period in the Japanese archipelago, the “Yayoi Period” (~900/800 BC–300 BC) was a lynchpin period in ceramic manufacturing, during which roots of craft specialization took hold against a backdrop of cultural hybridization. Tentative results allow us to trace paths of acceptance, rejection and standardization in ceramics, establishing the foundations for an increasingly stratified society and state formation in later periods.

5 TO WHEEL OR NOT TO WHEEL? POTTING PRACTICES IN THE WESTERN CATALAN PLAIN (CATALONIA, SPAIN) DURING THE VITH CENTURY BC

Abstract author(s): Castellano Aragonés, Alba (Universitat de Lleida; Grup d’Investigació Prehistòrica)

Abstract format: Oral

In our proposal, we examine the role of pottery production and the spread of the potter’s Wheel during the Early Iberian period (VI BC) in the Catalan Western Plain of the Iberian Peninsula. There are no studies that have examined this process in that geographical area. Through a combined approach based on macroscopic and petrographic analyses, we reconstruct the chaînes opératoires and determine the technological styles in the first wheel-made pottery productions that were found in the sites of the Fortress of Vilars, the oppidum of Gebut, Tossal del Molinet and Castellot de la Roca Roja. The results may demonstrate that potters or groups of potters who adapt the wheel-made process shared substantial technological choices. At the same time, they followed their own savoir-faire of producing ceramics, expressed in fundamental technological variability. This evidence suggests that wheel-forming techniques

can be more variable than one would have traditionally thought and that the adoption process of that new technology was according to the modalities of the different social contexts.

6 TECHNOLOGICAL ASPECTS AND PROVENANCE OF MIDDLE AND LATE NEOLITHIC COASTAL POTTERY: A CASE STUDY OF SILIŅUPE AND SLOCENE SETTLEMENTS

Abstract author(s): Visocka, Vanda - Bērziņš, Valdis (University of Latvia Institute of Latvian History) - Kons, Artis (University of Latvia Faculty of Chemistry)

Abstract format: Oral

The Siliņupe and Slocene Middle–Late Neolithic (4100–1800 cal BC) settlements, which have yielded large assemblages of artefacts, including pottery, are located near the seacoast of present-day Latvia. Although the pottery has been studied previously, little attention has been given to the technological aspects, provenance, or social interpretations. This paper applies a suite of methods, including macroscopic and microscopic observations, ceramic petrography and WD-XRF analysis.

With regard to the techno-typology of the ceramics, it can be assumed that the majority of the vessels were produced as pots for cooking. Four types of tempering material were distinguished: shell from freshwater mussels and clams (*Cerastoderma* sp.) as well as granitic rock and grog. Ornamentation is seen on most vessels, taking the form of pits, lines and impressions of harbour porpoise (*Phocoena phocoena*) teeth.

Diverse potting practices indicate different social groups and transfer of technological knowledge within the coastal hunter-fisher communities, reflected especially in the use of grog temper and porpoise tooth ornamentation. The distinctive decoration has analogies in pottery from sites in Estonia as well as inland Latvia – in the areas of lake Lubāns and Burtnieks. This possibly indicates the practice of exogamy or else pottery transfer within the highly developed exchange system. Grog, on the other hand, has no known analogies in the pottery of this period in Latvia. Moreover, the characteristics of the grog indicate that it originates from a shell-tempered vessel but has been incorporated into a vessel with mineral temper. This could relate to the particular social and/or symbolic context, such as change of identity and cultural affiliation, or may reflect processes of exogamy.

7 THE USE OF THE PETROGRAPHIC METHOD AND LASER ABLATION INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY (LA-ICP-MS) IN THE STUDY OF CERAMICS

Abstract author(s): Przybysz, Anita - Szczepaniak, Małgorzata - Sobkowiak-Tabaka, Iwona (Adam Mickiewicz University in Poznań)

Abstract format: Oral

Pottery is one of the most frequently discovered materials in archaeological sites. Our presentation focuses on applying petrographic, and Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) to the Middle Neolithic (3900/3800 – 3450/3400 BC) pottery set. Both methods are destructive, meaning all or part of the sample is irretrievably destroyed. However, they are very accurate and allow us to recognize different compositions of the ceramic body of individual vessels over time and other arrangements for a given pottery workshop.

An example of using the previous research is the analysis of the composition of clay bodies used to make vessels from the archaeological site in Kiełczewo (western Poland), related to the Funnel Beaker culture. A total of 27 fragments of pottery were selected, thin sections were prepared and examined under a polarizing microscope, and the same fragments were analyzed with an LA-ICP-MS. Preliminary interpretations show significant differences in the content of such elements as Rb, Sr, Zr, and Ba in selected samples.

Thanks to the analyzed admixture, an attempt can be made to identify the place of origin of the discussed ceramics, as well as traces indicating the presence of specific archaeological cultures on the territory of Greater Poland and the rest of the country. In addition, the characteristics of admixtures may allow for deductive reconstruction of the technological process of making vessels and indicate preferences determining the use of a specific admixture to obtain the assumed result. Conclusions from research on the collected materials can be used for comparative analysis of local ceramic production with other archaeological sites within one cultural circle.

The conducted studies displayed detailed information on the way of pottery making, the composition of the clay body, admixtures, firing, and the origin of the raw material.

8 REST IN CLAY: CERAMIC TECHNOLOGICAL ANALYSIS OF A BRONZE AGE CREMATION CEMETERY AT MAKLÁR-KOSZPÉRIUM (NE HUNGARY)

Abstract author(s): Mengyán, Ákos (Hungarian National Museum; University of Miskolc)

Abstract format: Oral

Around the middle of the 2nd millennium BC, a new pan-European phenomenon emerged in Central Europe, the Tumulus culture, which spread from eastern France to eastern Hungary. The origin of this cultural complex is a debated subject, but it was probably accompanied by socio-political and ideological changes in the local population, and researchers assume a small amount of migration from the direction of its core area (namely the Upper Danube and Upper Rhine regions). Based on ceramic typology, territorial groups can be separated, which might have their roots in the preceding regional cultures.

The analysed site, Maklár-Kospérium is located on the northern fringes of the Great Hungarian Plain, where 121 cremation burials were found in 1960 and 1962. The site can be linked to the Tumulus culture and could be dated by relative chronology between 1500–1300 BC. In the cemetery, four grave groups could be distinguished that might be connected to specific familial and/or tribal groups of this community. In this region, the Tumulus culture (1500–1300 BC) was preceded by the Füzesabony culture (2000–1500 BC) which might have strongly contributed to the development of the local variant of the Tumulus culture.

Besides typological and stylistic analyses, this regional case study focuses on various aspects of ceramic manufacturing to detect the methods of raw material preparation and firing. Macro- and microscopic analyses, thin section petrography, and X-ray powder diffraction (XRPD) have been applied to investigate these issues. Furthermore, the results were compared with other ceramic technological data from Füzesabony and Tumulus culture sites in order to identify local and non-local components and local evolution or continuity of tradition.

9 POTTERY TRADITIONS DURING THE FIRST STATES' EMERGENCE. ANALYSIS OF LATE CHALCOLITHIC 3-5 POTTERY FROM THE EASTERN HĀBUR REGION, IRAQI KURDISTAN

Abstract author(s): Koutouvaki, Eirini (Department of Cultural Heritage: Archaeology and History of Art, Cinema and Music, University of Padua) - Amicone, Silvia (Archaeometry Research Group, Eberhard Karls University of Tübingen; Institute of Archaeology, University College London) - Gilstrap, William (Center for Materials Research in Archaeology and Ethnology, Massachusetts Institute of Technology; Harvard Museum of the Ancient Near East, Harvard University) - Sconzo, Paola (Dipartimento Culture e Società, University of Palermo; Institut für die Kulturen des Alten Orients - IANES, Eberhard Karls University of Tübingen)

Abstract format: Oral

A crucial moment in the development of ancient Mesopotamia, the Late Chalcolithic (c. 4500–3100 BCE) is associated with the emergence and spread of its first urban societies. Expansion of south-Mesopotamian cultural traits into northern Mesopotamia and more distant areas around 3800–3100 BCE (LC3–5), or the 'Uruk phenomenon', is considered the acme of this phase. The ubiquity of pottery use and diversity of ceramic technological traits during this period make this material an advantageous proxy for human behaviors including mobility patterns and the transfer of technical knowledge.

This presentation provides the preliminary results of a study into the technological landscape of a selection of LC3–5 pottery assemblages from archaeological investigations in the frame of a large-scale survey (EHAS) and an excavation (KUGAMID) of the University of Tübingen at the foothills of the Zagros mountains in the autonomous Kurdistan region in Iraq. The typological examination of pottery with the now revealed network of sites hints at the co-existence of local and southern Uruk style productions. Our study integrates the results from a typological study with compositional data derived through ceramic petrography and neutron activation analysis (NAA). The results shed new light on relationships between the study area and southern Mesopotamia and further demonstrate presence of a local, long-lasting pottery tradition which, as in other northern Mesopotamia regions, integrates southern Uruk characteristics.

A. THE MANUFACTURING PROCESS AND SOCIAL PRACTICE: THE STORY OF WHITE PASTE INLAY

Abstract author(s): Miloglav, Ina (Faculty of Humanities and Social Sciences, University of Zagreb) - Kudelić, Andreja - Neral, Natali (Institute of archaeology, Zagreb)

Abstract format: Poster

White paste or incrustation is a very characteristic and widespread technique of decorating prehistoric ceramic vessels, especially within the pottery traditions in the Carpathian Valley and the Balkans. To this date, several scientific papers have been written about the mineral and chemical composition of the white paste material and its origin. The results showed that the basic component of various recipes consists of calcite or hydroxyapatite – the bone material, and aragonite – carbonate polymorph, found in bivalves and mollusc shells. However, the process of making a paste,

especially regarding the binding agents, remained unexplored. Therefore, the initial research objective was to determine paste composition, how it was prepared and the application procedure.

This paper presents the results of compositional analysis of a white paste inlay used for decorating Copper Age (2880-2470 BC) and Bronze Age (1900-1700 BC; 900 BC) pottery in continental Croatia, applying optical microscopy and FTIR spectroscopy analytical methods. However, critical new knowledge has been established through archaeological experiments conducted in controlled and real conditions using raw materials (animal bones, deer antlers and river Mollusc shells) found by analytical methods. The result showed that no special binder is needed and that the material's homogenisation and strength resulted from applying one of the oldest chemical processes known to man – slaking of quicklime.

Additionally, a social mark is reflected in the physical properties of specific raw materials used to make different inlay recipes, emphasising the traditional practices and cultural identity specific to a particular community. Moreover, the conditions in which such paste could have been prepared indicate the cross-craft interactions linking these and other activities open up new possibilities for interpreting and understanding past communities.

B. CERAMICS DECORATED WITH RED PIGMENTS DURING THE NEOLITHIC: NEW CONTRIBUTIONS FROM THE ARCHAEOLOGICAL SITE OF LOS CASTILLEJOS (MONTEFRÍO, GRANADA, SPAIN)

Abstract author(s): Vico Triguero, Laura (Department of Prehistory and Archaeology, University of Granada) - López Tuñón, José - Sánchez Vizcaíno, Alberto (University Institute for Research in Iberian Archeology, University of Jaén) - Cámara Serrano, Juan (Department of Prehistory and Archaeology, University of Granada) - Montejo Gámez, Manuel (University Research Institute for Iberian Archaeology, Physical and Analytical Chemistry Department, University of Jaén) - Caro, Jesús (Department of Prehistory and Archaeology, University of Granada) - Cámara Linares, María (Physical and Analytical Chemistry Department, University of Jaén)

Abstract format: Poster

This research shows the archaeometric results (μ EDFRX and MRS) obtained from the red paintings and red inlays of the incised and impressed decorations of the Neolithic ceramics from the archaeological site of Los Castillejos in Las Peñas de los Gitanos (Montefrío, Granada). This open-air site, located in the southeastern quadrant of the Iberian Peninsula, shows a stratigraphic sequence which spans from the Early Neolithic to the Bronze Age (5400-1750 cal B.C. approximately). Specifically, for the 16 Neolithic phases, a total of 31 radiocarbon dates are available, which have made it possible to reconstruct the evolution of the production of this type of pigments throughout the occupation of this period. Likewise, the connection of the characterized pigments with the ceramic forms and the other decorative techniques which are associated, in combination with the specific determination of these pigments, has allowed us to obtain information about the different areas of supply of the minerals from which they were obtained and to evaluate if these productions were native or, on the opposite, if they came from other far areas.

601 WEAVING ARCHAEOLOGY, ART AND LITERATURE: NARRATIVES & REPRESENTATIONS

Session theme: 3. Heritage Narratives and Representations

Session organisers: Martins, Ana Cristina (IHC - Polo da Universidade de Évora; IN2PAST; UNIARQ-Universidade de Lisboa) - Casimiro, Tânia (Universidade NOVA de Lisboa) - Mouriño Schick, Andrea (Universidad de Vigo) - Crutcher, Megan (Texas A&M University)

Session format: Regular session

Archaeology has always used art and literature in several ways: as a source of information, ways of building, setting, and wide spreading narratives and representations. These narratives and representations change according to the development of archaeological knowledge and heritage. But they change in accordance with the space and time in which they are produced, becoming(re)constructed, destroyed, replaced, adapted, or confronted, depending on prevailing or emerging agendas, be they ideological, political, social, economic, cultural, ethnic, gender, or religious.

But are we, the ones engaged with different forms of archaeology fully aware of this reality?

To what extent do different literary and artistic contexts influence the construction of archaeological narratives and representations, throughout time? In what ways do these same narratives and representations contribute to underpin agendas (including scientific, personal, and institutional), while breaking paradigms and prejudices (namely sexual, gender, ethnic, class and age)? What is the nature and extent of this ongoing dialogue between archaeology, art, and literature? How does this constant interweaving (i)materialize? Who dictates, nurtures, and manages it? For what purpose(s)?

And what about the creative freedom of the author, whether artistic or literary? How are the discourses - written and iconographic - constructed from archaeology? How to make scientific knowledge reach different types of audienc-

es? And what space do the new social realities – migratory, nomadic, etc. - occupy in this increasingly interwoven complex?

This is a vast set of questions to which we seek to answer during this session. We therefore invite archaeologists from different fields and geographies, illustrators, historians of archaeology, women and gender historians, art and audio-visual historians, anthropologists, and all those who are dedicated to the relationship between archaeology, art and literature embodied in different media, education, and instruction, from textbooks to museums, through social networks, to join us.

ABSTRACTS

1 CLOSE ENCOUNTERS OF A HUMAN KIND, DISTINCTION VERSUS CONNECTEDNESS IN NEANDERTHAL – HOMO SAPIENS ENCOUNTERS IN SCIENCE FICTION

Abstract author(s): Peeters, Susan (Erasmus School of Philosophy, Erasmus University) - Soressi, Marie (Faculty of Archaeology, Leiden University) - Jensen, Stine - Zwart, Hub (Erasmus School of Philosophy, Erasmus University)

Abstract format: Oral

Recently, our image of Neanderthals, long considered as dumb brutes, has changed dramatically, and this has repercussions for long-standing views about ourselves as well. Neanderthals provided food for science fiction, and novels reveal the shifts that have occurred in our views on Neanderthals in terms of different or similar, deficient or superior, strange or familiar. Whereas archaeological findings often raise more questions than they answer, novels can be considered laboratories of the imagination, allowing authors to explore possible scenarios. They can function as spotlights, conveying and amplifying stereotypes and ideologies which are also at work in scholarly discourse more explicitly. With the expert Neanderthal discourse as a backdrop and frame of reference, I will focus on novels that deal with Neanderthal – Homo sapiens encounters. We try to understand Neanderthals in terms of their humanity, but establish identity by the difference between us and them. What happens when humans and Neanderthals meet? What differences or similarities are highlighted, which characteristics are valued, what is silenced? How do writers in comparison with scientists deal with the ambiguity of Neanderthals, being strange and familiar at the same time, human, but not-us? Explicit attention will be given to literary archetypes such as the role of the (exploring, conquering) Hero and the opposite side of the archetypal coin, the Orphan, who desires to become connected. This captures a basic ambivalence: the desire to distinguish ourselves versus the need for connectedness. By stepping out of the current social configuration, fiction can reflect and reveal current anxieties and preoccupations as well as implicit biases underlying our ideas and ideals of human and humanness, that should be acknowledged and addressed. By emphasising the importance of connectedness, the figure of the Orphan may function as a counterbalance to an inflated heroic view of early human history.

2 REPRESENTATIONS AND NARRATIVES OF FINNISH STONE AGE

Abstract author(s): Kunnas, Liisa (University of Helsinki)

Abstract format: Oral

There are persisting myths, beloved “master narratives”, and widely-recognized artistic representations included in the perceptions of the past of every nation. Often their beginning can be traced to times of constructing national (or ethnonationalistic) identities. In political and ideological use of history and archaeology, creating popular narratives and images is an important tool. Later on, these representations get represented over and over again in art, literature, and archaeology as well.

In my study, I analysed late 19th – early 20th century depictions and representations of Stone Age in some iconic and well-known Finnish artistic and literal works, as well as in archaeological literature. Through the application of methods of literary analysis, some narratives aiming at making the Stone Age more included in the nationalistic, teleological story of “Finnishness” emerged. This contradicts previous views of the Stone Age having been excluded from the construction of national past due to its temporal distance and ethnic otherness. Moreover, these images and narratives are still included in, and affecting the concept of Stone Age today.

3 NARRATIVES AROUND THE CONCEPT OF ‘ROCK ART’: DECONSTRUCTING THE TERMINOLOGY?

Abstract author(s): García García, Estrela (University of Santiago de Compostela; GEPN-AAT)

Abstract format: Oral

Since the early days of archaeological studies on prehistory in the West and, in particular, rock art, there have been different approaches to interpreting and perceiving these graphic representations of prehistory, but the term “rock art” has always been the general way of referring to them.

The main focus is on the nature of the nomenclature of such cultural and graphic expressions, and the extent to which current ideas and social conventions about art, history and heritage influence the way we perceive them, with a particular emphasis on the way in which prehistoric rock art is referred to as art rather than language.

The debate is centred on questioning the very nomenclature of art when referring to prehistoric art, and looking for evidence to show that, despite our current approach, there are other ways of interpreting rock art.

This is done through the study of how sites with rock art are managed and related to sites with rock art in two types of contexts: on the one hand, examples of the Western approach, mainly cases in Europe; and on the other hand, contexts with rock art made by indigenous communities or population groups far removed from the Western standard. This comparison will serve to explore this issue and to raise answers to these questions.

4 THE CONSTRUCTION OF GENDER IN HERITAGE NARRATIVES: THE CASE OF PREHISTORY.

Abstract author(s): Mouriño-Schick, Andrea (University of Vigo)

Abstract format: Oral

We present a synthesis of the results of an academic research that addresses the discursive construction of a specific past, prehistory, and of a specific territory, Galicia, in the field of heritage dissemination between 1980 and 2020 from a critical, reflexive and feminist perspective. We designed a systematic methodology based on the strategies and tools of analysis of Critical Discourse Studies, specifically content analysis.

The objective was to identify the prevailing discursive patterns in the different spaces, channels and media of heritage dissemination from a gender perspective as a diagnosis. And likewise, to define the historical situations and the objects that make up the discourse, both in its textual and visual aspects. In other words, to find out how scientific knowledge generated in the academic sphere is constructed, produced and communicated to society, especially to non-specialist audiences. Therefore, we will not focus on historiographical debates, nor on the veracity of the facts, but rather on examining and abstracting the messages and ideas generated around the representation of prehistoric humanity that take shape and become relevant in today's society by leading to dynamics that legitimise the gender inequalities of the present.

We will attend to the processes of exclusion that arise from the patrimonial construction of gender in heritage spaces and their narratives at different levels.

5 GENDER PERFORMATIVITY AND HERITAGE DISCOURSE: THE TANGIBLE/INTANGIBLE DISTINCTION REVISITED

Abstract author(s): Voulgareli, Isavella (Cambridge Heritage Research Centre, Department of Archaeology, University of Cambridge)

Abstract format: Oral

The 2003 UNESCO Convention for the Safeguarding of Intangible Cultural Heritage directed attention to a different approach required to protect and safeguard Intangible Cultural Heritage (ICH) as opposed to Tangible Cultural Heritage (TCH). However, definitional differences between TCH and ICH led the tangible/intangible heritage distinction. Relevant literature has not moved beyond the tangible/intangible divide to an all-encompassing approach to heritage, although formal separation between TCH and ICH has resulted in a binary construction that overvalues one pole while disparaging the other. In my paper, I explore a research question that has been overlooked: how does gender help us reassess the heritage-making process to reframe the tangible/intangible heritage distinction? I intend to discuss how the concept of gender provides a critical interpretative framework to theorise the relationship between TCH and ICH and hence to reframe the tangible/intangible heritage distinction. The study is concerned with Judith Butler's work on performativity (1988, 1990, 1993); it examines the potential of gender to effect change through the process of heritage-making. For the purposes of this research, I am focusing on the case of marble craftsmanship at the Cycladic Island of Tinos in Greece. In Tinos, marble sculpture has always been transmitted from fathers to sons, or kinsmen. It is structured on a familial basis through male lines. As such, the official narratives about Tinian marble craftsmanship are based on a male norm that defines an individual's practical knowledge of marble and the (re)construction of identities. The study examines whether a critical feminist approach can negotiate the relational power dynamics which establish a stable perspective on Tinian marble craftsmanship, and thus 'trouble' how TCH and ICH are (re)formed and (inter)act to (re)create meaning for heritage. To do so, it employs reflexive ethnographic methods and brings together insights from the marble-carving community on the island of Tinos.

6 ACTS OF ART(E)FACTS: THE SNARTEMO CASE. NATIONAL HERITAGE AGENDA OR GLOBAL ART AFFILIATION

Abstract author(s): Larsson, Annika (The Society for Textile Archaeology & Culture Studies; Uppsala University) - Guennoun, Mohammed (The Society for Textile Archaeology & Culture Studies) - Lind, Kerstin (The Society for Textile Archaeology & Culture Studies; Linköping University) - Pallin, Karolina (The Society for Textile Archaeology & Culture Studies; Uppsala University)

Abstract format: Oral

This lecture deals with archaeologically accepted biases based on ideological agendas within the Scandinavian historiography. The current case focuses on a textile find attributed to the Norwegian Iron Age gravefield at Snartemo, and highlights still living nationalist constructions within the history writing. We propose a change.

The Snartemo gravefinds were first published in 1935. When submitted into museum, a band enriched with colorful geometric patterns seems to have already been in the collections. An Oriental cultural sphere was discussed. During the Nazi occupation of Norway, however, the swastika band patterns were reinterpreted to fit a genuine Germanic heritage. Attributed to a magnificent sword in chamber grave Snartemo V, copies were produced as ideological symbols for the Nazi elite.

Although critical of Nazism, and despite neither taking into account the art-historical affiliation nor the lack of a specific archaeological context, the ideas of a genuine ancient Scandinavian identity fit well within the framework of the national historiography. Aspects about confusions have been addressed (2003, 2012). But, in a 20-page article published in the “Swedish history teachers’ yearbook” (2019), the nationalist agenda is reinforced by images where the author has cut and pasted among the band patterns to fit. The conspiratorial idea of “political historical revisionism” regarding the scientific facts, worldwide spread, is scary.

In conclusion, we present another example on the visually spread idea of an isolated Scandinavian cultural heritage to the next generation, globally implemented already to young children. In a new interpretation (an animated film from Japan) of the world-famous Swedish children’s story about “Ronja, the Robber’s Daughter” – Ronja becomes, through symbolic textiles and clothing, a Scandinavian Viking daughter.

This lecture is part of an extensive international research project entitled “Acts of Art(e)Facts”. Additional partial studies within the project are presented in session #498 and #696 respectively.

7 THE TRUTH IN FAKES: PERUVIAN NEO-ANTIQUITIES AS A SIGN OF THEIR TIMES

Abstract author(s): Boza Cuadros, Maria Fernanda (University of Amsterdam)

Abstract format: Oral

European ethnographic museums are riddled with non-authentic pre-colonial Peruvian objects among the Andean archaeological collections they house. These holdings have often been relegated to the back of storage rooms, and their study has commonly emphasized that which they are not: not “original”, not created by a temporal and ethnographic Other, and not of great value. Furthermore, curatorial practices in museums have reinforced their lack of importance, thus erasing their meanings and scholarly potential. These stances, however, erase that which these objects can say about the time they were made, the people who manufactured them, and why they were collected.

I focus here on a set of objects made in Peru in the late nineteenth century that I call neo-antiquities. Neo-antiquities were traded within the antiquities market in the late nineteenth and early twentieth centuries, and are currently found in at least 28 ethnographic museums across 12 European countries. Through formal, technological and iconographic analyses, and drawing on contemporary historiographic and artistic trends, I demonstrate that neo-antiquities’ materialities embed complex understandings of the material culture before the sixteenth century Spanish invasion. They further speak to contemporary narratives of Peruvianness that emerged in a context of post-war nation-making. Importantly, neo-antiquities show that scholarly knowledge of pre-Spanish invasion objects was not limited to the elite academic circles, but were also part and parcel of broader imaginations and practices.

8 THE CURSE OF THE MUMMY STUDIES: USING ART AND LITERATURE TO CHALLENGE PRECONCEIVED NOTIONS ON MUMMIFIED REMAINS

Abstract author(s): Doherty, Alia (University of Manchester)

Abstract format: Oral

Archaeologists have long attempted to escape their modern biases when reconstructing the dynamics of the past. Often unconsciously, preconceived notions of Egypt’s religious and magical beliefs have heavily shifted the perception and interpretation of biological remains. A consequence of Victorian interpretations, public perceptions fuelled by the media, and contemporary religious/ethical ideals. As a result, modern studies of biological remains are often conducted in isolation to the magico-religious beliefs conveyed through Egyptian art and literature, which were a key

aspect in funerary practice. The aim of this presentation is, therefore, to present all the connecting elements between the physical and spiritual while also highlighting the biases which arise from earlier studies. Both Egyptian art and literature strongly suggest a symbiotic relationship between the body, the soul, and the living which should be taken into consideration when examining funerary practices. Furthermore, this presentation aims to tackle ethical issues which arise when dealing with human remains, by drawing from beliefs outlined in Egyptian evidence.

9 WHEN THE SHIFT'S OVER: AN ARTISTIC AND LITERARY GENDER REPRESENTATION IN PORTUGUESE WORKING-CLASS NEIGHBOURHOODS

Abstract author(s): Pacheco, Susana - Leão, Afonso (CFE-HTC Nova University of Lisbon) - Sequeira, João (CICS-NOVA - Minho University/IHC)

Abstract format: Oral

Since the 19th century, with the advent of industry, new types of domestic behaviours started to appear all over the western world. Working-class neighbourhoods exist because of that development. In fact, they were often built as a strategy by the factories' owners to better control their employees. These neighbourhoods housed entire families that often, besides sharing a house, also shared a workplace among themselves and with their neighbours. Often in these communities existed shared places that were people who lived in the neighbourhood hang around, and consequently worked there. Among those places, we can count schools, grocery stores, public washing facilities, and so many other "establishments" where people would voluntarily or not create relationships with their neighbours. Would they gradually become a community? And beget a shared identity among them? Among those working-class people that inhabited these neighbourhoods, there were also several different women who, after their work shifts (and sometimes even during those) still had to take care of the household chores, their children, and their husbands (when they were mothers and/or married) regularly on their own, in other cases, help their mothers (who quite often were also their working colleagues) with those tasks. We know little or almost nothing about the role and presence of these women in those Portuguese neighbourhoods, however literature, paintings and photographs, conciliated with gender theory, allow us to build a perception of what was their social roles and how others perceived them. This paper is our attempt to contribute to changing that scenario in Portugal.

10 NARRATIVES OF AFRICAN MARITIMITY: EARLY MODERN IMAGES OF AFRICANS AND THEIR WATERCRAFT

Abstract author(s): Crutcher, Megan (Texas A&M University) - Rooney, Kelsey (University of Chicago)

Abstract format: Oral

This paper interrogates historical images of African mariners and their watercraft to ask what these artistic depictions reveal about African maritimetry. African canoemen, pilots, and boatsmen were critical to European engagement with the West African coast, as evinced by their descriptions and portrayals in archival records. What details are attested to, and what is omitted? This paper also contrasts how authors of different times and nationalities represented African mariners, especially with respect to the epochs of exploration, revolution, and abolition. The choices made by the artist—what aspects are emphasized in these depictions and what is minimized, their stylistic decisions, and changing symbolic imagery—can illuminate the power dynamics between Europeans and Africans during these conflict-laden times. As these images of African mariners were produced and reproduced through European markets, they reflected the changing European attitude towards race and racialization, concepts of colonialism and empire, and gendered or racialized labor. Besides watercraft, images also display material culture, giving archaeologists clues to what may be available in the archaeological record. European-created imagery of African maritimetry blurs the lines between art, archaeology, and history, and are a vital source for historical archaeological study.

11 ARCHAEOLOGY, ARCHAEOLOGISTS, AND BOOKPLATES: THE PORTUGUESE CONTEXT

Abstract author(s): Martins, Ana Cristina (IHC - Polo da Universidade de Évora)

Abstract format: Oral

The relationship between archaeology, art, and literature is relatively well-known. At least, in general. Furthermore, as far as artistic production is concerned, this connection has been worked on mainly in the fields of painting, drawing, sculpture, and cinema. Still, the necessary attention has not been given to different typologies of the so-called 'Miniatural Art'.

This is the case of bookplates, despite the much-diversified information contained in each of its specimens, true marks of possession, in the specific case of books. Looking over its surface often becomes an authentic iconographic and iconological reading exercise that allows us to penetrate details (sometimes unmentionable) of the life and work of its holders.

We propose, therefore, to demonstrate how, like any other work of art, the bookplates allow a stratigraphic analysis of the person who owns it, using, for this purpose, Portuguese examples, namely from archaeologists. This exercise will allow us to unveil a little more about the scientific path of each author, including personal networks while establishing parallels with the presence of archaeology in other artistic categories and typologies.

12 IT IS ALL ABOUT THE JOURNEY: TRAVELLING LOGS IN A MOVABLE CONTEMPORARY ARCHAEOLOGICAL SITE

Abstract author(s): Santos, Joel (University of Leicester) - Casimiro, Tania - Pacheco, Susana - Leão, Afonso (CFE-HTC Nova University of Lisbon)

Abstract format: Oral

In August 1998, a 1964 Volkswagen van was parked in its usual garage after another month of traveling around Europe. It was her last journey. Almost 25 years later, in 2022, the van is still parked in a garage in Portalegre (Portugal), prepared for the next travel that never happened. In October of that year, this group “excavated” that van trying to recognize all that happened during the 58 years it existed. The result may have been just a description of that context, what was inside trying to interpret what it was used for and by who... however why not try a different interpretation? Based on the van life novels written by Ken Ilgunas, *Walden on Wheels: On the Open Road from Debt to Freedom* (2013), and Kristine Hudson, *How to Live the Dream: Things Every Van Lifer Needs to Know* (2020) the purpose of this paper is to analyze the social, economic and cultural behaviours of the occupants of this van accordingly to the tales narrated by authors that make life van their living style, and on the other hand to answer archaeological questions such as economic organization, social complexity, power relations, identities, ideologies, and the study of conflict. This context will also allow discussions about the forces of globalization, and the way these influenced the van travelers, even from places such as Australia, in the antipodes of Portugal.

13 CAIMAN’S LAND: THE ORINOCO ILLUSTRATED TRAVEL NOVELS IN FRANCE IN THE LATE 19TH CENTURY AND THEIR ARCHAEOLOGICAL DISCOURSE

Abstract author(s): Lozada-Mendieta, Natalia (Universidad de Los Andes)

Abstract format: Oral

During the Third Republic, France used geography, and particularly travel novels, as political propaganda to promote the expansion of commerce and the exploitation of new territories. The Orinoco novels were inspired by the travels of two key French government figures: Jules Crevaux (1883) and Jean Chaffanjon (1889). The texts supported the idea of French (European) supremacy by presenting the relatively unknown region of the Orinoco as pristine nature with savage animals and indigenous populations. Their novels, with more than 153 richly engraved illustrations, became very popular through the press and mass media, also inspiring the publication of Jules Verne’s *Le Superbe Orenoque* (1896). All three authors use archaeological sites in the area, including burials and rock art, as evidence of a degeneration among indigenous communities. Unpublished photographs and sketches of both the Crevaux and Chaffanjon expeditions show how the images were intentionally edited to appear less “civilized”, for example, by omitting the western clothes used by indigenous populations. This paper discusses how the archaeological narrative and visual discourse was used in the novels to persuade the French and European public in favor of the exploitation of the Orinoco based on a representation of their inhabitants as savage and without memory, ultimately denying them their own history.

14 TRAVEL LITERATURE NARRATING ARCHAEOLOGY: THE GRAND TOUR EXPERIENCE

Abstract author(s): Manzetti, Maria Cristina (University of Cyprus)

Abstract format: Oral

With the arrival of the Grand Tour phenomenon in the late XVII century, the production of travel literature increased substantially. The craving for classical antiquities spread in the Mediterranean area was one of the reasons which moved numerous Northern and Western Europeans to undertake adventurous journeys. Some of these trips, which often resembled modern archaeological expeditions, are witnessed in detailed travel journals equipped with descriptions and drawings. However, they are clearly different from the archaeological reports as we know them today. Indeed, one of the most fascinating aspects of these diaries is the subjectivity that emerges from the narration. The admiration of famous monuments which populate lands protagonists of determinant historical facts provoked deep feelings in the travellers coming from far away. What these emotional journeys can tell us about past archaeological experiences? Did such kind of narration of emotions influence the way classical culture has been understood and adopted by the European countries?

The aim of this paper is to present a deep mapping methodology in order to investigate this kind of question. A deep map differentiates from geographical and thematic maps because it represents subjectivity, rather than objectivity. Experiences, feelings and opinions are the main characters of deep maps. The case study is the island of Sicily (Italy),

rich in Greek and Roman witnesses, and how it is described by 11 different European travellers in the XVIII century. By means of GIS, a geo-database was built, which links the different emotions of several travellers to the places and monuments visited during the Grand Tour. The adjectives describing sensations related to antiquities found in the diaries were coded and inserted in the geo-database. The final map shows all the itineraries of the travellers and the results of the analyses based on the information contained in the geo-database.

602 RUNES, MONUMENTS AND MEMORIAL CARVINGS NETWORK

Session theme: 3. Heritage Narratives and Representations

Session organisers: Busset, Anouk (Université de Lausanne) - Ljung, Cecilia (Stockholm University) - Forsyth, Katherine (University of Glasgow)

Session format: Round table

It is more than a decade since Dr Cecilia Ljung and Dr Marjolein Stern founded the International Research Network Runes, Monuments and Memorial Carvings to build up and strengthen an interdisciplinary research environment for researchers working with different aspects of carved stone monuments from the Viking Age and the early Middle Ages in Scandinavia, the British Isles, Ireland and Northern Europe. The focus on stone monuments, preferably with a commemorative function, provides coherency within the network, which encompasses a variety of research topics along a broad chronological and geographical spectrum. It is an important characteristic of the network that the participants have an interest in approaching the research material from a cross-disciplinary angle. The Network was aimed initially at postgraduate students and early career researchers, but it received a large interest among scholars beyond this stage, and welcomes researchers at any stage of their career, although young academics remain an important target audience. The Network has in the past arranged three successful thematic workshops, and is seeking to organise new productive encounters in the future. The Roundtable will provide an opportunity for current or prospective members of the network, and anyone interested in Runes, Monuments and Memorial Carvings of this period, to come together for the first time in a number of years, to discuss recent developments in the field and to identify potentially fruitful avenues of research and future collaboration.

603 REPLICABLE ARCHAEOLOGY: LOOKING FOR WORKFLOWS AND DATA MANAGEMENT STRATEGIES FOSTERING DATA REUSE AND METHODOLOGICAL TRANSFERABILITY IN ARCHAEOLOGICAL SCIENCE

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Lombao, Diego (GEPN-AAT, Dpto. Historia I, University of Santiago de Compostela; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA) - Rabuñal, José Ramón (Instituto Universitario de Investigación en Arqueología y Patrimonio Histórico - INAPH, University of Alicante; Department of Archaeology and Heritage Studies, Aarhus University) - Falcucci, Armando (Department of Geosciences, Prehistory and Archaeological Sciences Research Unit, Eberhard Karls University of Tübingen) - Leuret, Jean-Baptiste (Archéologie des sociétés Méditerranéennes - ASM - CNRS) - Tobalina-Pulido, Leticia (Institute of Heritage Sciences - Incipit - CSIC)

Session format: Regular session

The application of quantitative methods in archaeology has grown exponentially over the past decades. This tendency towards quantification is mainly driven by the need to build more robust interpretations about the past, limiting the subjective factors of qualitative analyses. Quantification has gone hand in hand with the development and spread of digital tools, whose generalization has facilitated the replicability and reproducibility of archaeological studies. Besides, the application of quantitative and computational methods has allowed to address broader and more complex research questions and to handle far larger datasets.

Even though over the past years there has been an increased emphasis on transparency and reproducibility in archaeological sciences, such efforts have often ended up in making available datasets with either raw data or extended information about the processed data, using either open repositories or papers' supplementary information. However, critical issues such as replicability and transferability of research methods are often left in the background. As a result, there has also been a proliferation of custom methodological protocols designed for and applied to a specific case-study. We argue that this "methodological atomization" hinders our ability to compare results on a broader scale. Are we making the most effective use of the promising potentials of these digital and quantitative tools?

This session seeks to bring together scholars from different disciplines (from paleoanthropology or lithics to ceramology or architecture) working on different periods (prehistoric and historic archaeology) who use well-defined workflows for data collection, analysis, and visualization. These practices should not only be conceived to allow research reproducibility, but also replicability, reuse of data and methods, and facilitation of methodological transfer across

disciplines. We encourage presentations about specific case studies from different disciplines and periods, and dealing with questions at different scales, as well as formal strategies from research groups, projects, or institutions.

ABSTRACTS

1 TOWARDS A COMPARATIVE APPROACH TO CORE REDUCTION INTENSITY IN ARCHAEOLOGY

Abstract author(s): Lombao, Diego (GEPN-AAT, Departamento Historia, Facultade de Xeografía e Historia, USC; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA) - Rabuñal, José Ramón (Instituto Universitario de Investigación en Arqueología y Patrimonio Histórico - INAPH), Universidad de Alicante; Department of Archaeology and Heritage Studies, Aarhus University) - Morales, Juan Ignacio (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art)

Abstract format: Oral

In the last three decades, the proliferation of studies approaching the use-life or reduction intensity of retouched tools and cores has allowed new perspectives on the in-depth study on aspects of human behaviour such as technological organization, economic management of abiotic resources, occupations dynamics, transport and mobility patterns, and formation processes of archaeological assemblages, among many others.

However, depending on their theoretical or empirical basis, reduction intensity proxies are often expressed in different scales of values, hindering an easy correlation of the results with the real reduction intensity. Likewise, the need to adapt the methods to different types of tools or to specific research questions, has translated into the development of many methodological proposals, some of them quite sophisticated, but whose application often is limited to specific case studies or archaeological sites.

Therefore, researchers should aim beyond the design of custom indexes adapted to specific artifact types by fostering analytical tools allowing the comparison between different proxies and exploiting their complementarity.

In this paper we present an evaluation of some of the more widespread methods used on core reduction intensity studies by means of Weibull distributions. Finally, we propose a transferable workflow for approaching reduction intensity in archaeological assemblages by integrating different core reduction intensity estimation methods.

2 ADVANCING FUNCTIONAL ANALYSIS THROUGH TRANSPARENT AND REPRODUCIBLE EXPERIMENTAL RESEARCH: BUILDING A SOLID FRAMEWORK FOR THE IDENTIFICATION OF ROCK CRYSTAL PROJECTILES

Abstract author(s): Rabuñal, José Ramón (Instituto Universitario de Investigación en Arqueología y Patrimonio Histórico - INAPH, Universidad de Alicante; Department of Archaeology and Heritage Studies, Aarhus University) - Fernández-Marchena, Juan Luis (SERP, Seminari d'Estudis i Recerques Prehistòriques. Secció de Prehistòria i Arqueologia, Departament d'Història i Arqueologia, Facultat de Geografia i Història, Universitat de Barcelona; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Mateo-Lomba, Paula (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art) - Lombao, Diego (GEPN-AAT, Dpto. Historia I, Facultade de Xeografía e Historia, USC; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA) - Cueva-Temprana, Arturo (Department of Archaeology, Max Planck Institute for Geoanthropology) - Cazalla, Irene (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili, Departament d'Història i Història de l'Art)

Abstract format: Oral

Experimental archaeology is an essential discipline for hypothesis testing and the production of empirical reference models. However, for the findings of experimental studies to be reliable and become a benchmark in their fields of study, transparent and reproducible experimental practices and analytical procedures are crucial.

In this talk, we present a large-scale experiment analyzing wear features in rock crystal pieces used as projectiles. We documented different macroscopic and microscopic impact features, some of which had not been previously described. These features had a considerable variability in their attributes and diagnostic capacity. Based on our results, we suggest that the identification of projectile use should rely on the identification of a suite of features, at different scales of analysis, which do not necessarily follow recurrent patterns of association.

Thus, to construct a reliable reference collection of macroscopic and microscopic projectile impact traces on rock crystal, that can be transferable for functional analysis on archaeological materials or further experimental works, we invested on a twofold effort. Firstly, we emphasized a thorough report of the experimental procedure, precise definition of the analyzed variables and attributes, and detailed descriptions of the observed wear features in the published paper (Fernández-Marchena, et al., 2020). Secondly, we built a comprehensive repository with publicly accessible

documentation of the complete experimental and analytical procedures and the raw data of the wear features analysis, enabling the re-evaluation of our analysis and conclusions.

To frame this approach on the occasion of this presentation, we conducted a literature review to evaluate the state of replicability and open data practices in published experimental functional works. Our study highlights the importance of open data practices for building robust reference collections that set the bases for functional interpretations. Additionally, it showcases the potential of transparency and reproducibility standards in experimental archaeology research.

3 AN EFFICIENT WORKFLOW IN THE R PROGRAMMING LANGUAGE FOR REPLICABLE LITHIC QUANTITATIVE ANALYSIS

Abstract author(s): Falcucci, Armando (University of Tübingen) - Pargeter, Justin (New York University)

Abstract format: Oral

Stone tools (from now on lithics) dominate the prehistoric archaeological record and are pivotal to understanding cultural evolution as their production relies heavily on learned behaviors. Lithics are frequently described using attribute analysis, which is a powerful method for conducting intra- and inter-site comparisons as it builds upon a set of discrete and metric traits that can be statistically treated. Despite recent attempts to tune recording systems and increase interobserver reliability, lithic analysis is seldom replicable because of the infrequent sharing of datasets and workflows for data recording and statistical analysis. The latter do in fact frequently rely on proprietary software that does not permit sharing all coding steps conducted for reaching a certain conclusion. The software environment of R, which is the most used programming language in archaeology, can be a powerful ally to make lithic analysis open and fully replicable. In this talk, we will present an ongoing discussion surrounding the use of R in lithic quantitative analysis that aims at increasing transparency and interoperability by developing a system for data manipulation, visualization, and statistical treatment using several packages available in CRAN. Furthermore, we will show how R Markdown and Quarto are ideal for fostering data replicability by allowing embedding codes alongside observations and visual outputs. We will quantify differences between the MIS3 assemblage from Pinnacle Point 5–6 in South Africa and the Italian Protoaurignacian as an example of efficient and smooth inter-site comparison. Overall, we hope to generate a crucial discussion and stimulate new collaborative projects to foster research replicability and data reuse with the final goal of facilitating cross-regional studies of human cultural evolution.

4 A 3D FUTURE: LOOKING FOR REPEATABLE AND REPLICABLE 3D MODELLING METHODOLOGIES IN ARCHAEOLOGY AND BEYOND

Abstract author(s): Skole, John (Arkeologerna)

Abstract format: Oral

Content

This presentation will look at how 3D documentation has been employed to record and analyze landbound shipwrecks from the west coast of Sweden. The methodology attempts to utilize both objective and subjective observations of wrecks in situ, as well as timber for timber. 3D models are created, and then qualitative observations are annotated directly on to the geometry of the model. This allows for organic artifacts that will not be conserved to nevertheless have their forms and exact measurements preserved for posterity, all the while including the insights of the archaeologist that examined the physical object.

This method has proven useful not only for wreck documentation, but also for general field documentation. Versatile and replicable, the concept of using 3D modelling to preserve objective data followed by the digital annotation of those models in order to preserve subjective expertise shows promise for applications beyond the realm of artifact documentation, marine archaeology and even field archaeology.

Our expansion of methodologies benefiting from 3D technology is not without issue, however. The creation of models for documentation and study creates huge amounts of digital data that demands huge amounts of digital storage space. Instead of being a fleeting issue that will be forgotten as technology develops and disk space along with it, the ever-advancing field of 3D modelling is sure to continue to push data storage to the limit. Similarly, the constant development of the technology means that new file types are common, and there is no guarantee that the 3D model files we make today will be accessible in the future. Where will the files be stored? Who will maintain and update them? What long-term solutions are being pursued for the archiving of 3D models in an accessible and public fashion?

5 FAIR ASSESSMENT TO FAIR IMPLEMENTATION FOR REPRODUCIBILITY AND REPLICABILITY IN PHYTOLITH RESEARCH

Abstract author(s): Karoune, Emma (The Alan Turing Institute; Historic England) - Lancelotti, Carla (Universitat Pompeu Fabra) - Ruiz-Pérez, Javier (Texas A&M University) - García-Granero, Juan José (Spanish National Research Council) - Kerfant, Celine - Madella, Marco (Universitat Pompeu Fabra)

Abstract format: Oral

Our project ‘Increasing the FAIRness of phytolith data’, funded by EOSC-Life, is striving to set the basis for implementing the FAIR (Findable, Accessible, Interoperable and Reusable) data principles within the phytolith research community. Phytoliths are micro-botanical remains that are formed within the cells and intercellular spaces of living plants. They can be used to for example address archaeological questions concerning anthropogenic plant exploitation and landscape changes.

The phytolith community has been making efforts to standardise data through the development of a common nomenclature and other guidelines. However, the routine adoption of these standards has not been straightforward. Data sharing is minimal and data is often exclusively within paywalled published articles rather than in open repositories.

We have engaged with our community to find shared views on opening up research. We have also conducted an assessment of publications containing primary phytolith data and associated methods to fully investigate the key variables needed to improve data sharing in line with the FAIR principles.

This presentation will share the results of this work and how we have moved towards community-led FAIR guidelines that will help to share data, and metadata, more sustainably and more transparently to enable better communication of research. We will also discuss the Open Phytolith Community initiative that is developing the next steps of our work such as ontologies, an open publishing guide, and training in open research skills.

We will discuss what our work means for future phytolith research in terms of the increased quality of research and ultimately reproducible and replicable research. We will reflect on the wider learnings that can be taken from this project for the archaeological community.

6 FOSTERING FIELD DATA PUBLICATION THROUGH AGILE WEB VISUALISATION: THE ARCHEOVIZ R PACKAGE AND ITS WEB PORTAL

Abstract author(s): Plutniak, Sébastien (Laboratoire CITERES-LAT) - Vignoles, Anaïs (Laboratoire TEMPS)

Abstract format: Oral

A recent ARIADNE survey revealed that (1) lack of handy tools, (2) lack of training in data management, (3) lack of time to prepare data for publication, and (4) lack of recognition related to it are factors explaining the insufficient publication of field archaeological data.

There is a persistent imbalance between the time-consuming field data recording work and subsequent analysis and re-analysis work: the generated datasets are usually kept in the excavation’s documentation (in notebooks at first, in hard drives since the modernization of field recording methods), limiting their accessibility and reusability.

In this context, the “archeoViz” application was developed to contribute to removing these barriers. Embedded in an R package, this Shiny application makes it possible to visualise, interactively explore, and communicate archaeological field data on the web.

It generates interactive 3D and 2D plots, cross sections and maps of the remains and their refitting relationships, computes basic spatial analysis methods (convex hull, regression surfaces, 2D kernel density estimation), and displays excavation timelines.

archeoViz’s minimal interface (viz. issue 1) and the simple data structure it requires (csv files with five mandatory variables) (viz. issues 2, 3) make it handy, easy and fast to use. The app has been conceived as the building brick of a decentralised web system: users can deploy “archeoViz” instances specific to their data on the server of their choice. The “archeoViz portal” (<https://analytics.huma-num.fr/archeoviz/home>) is intended to index the datasets deployed with the app, increasing their discoverability and audience on the web (viz. issue 4).

archeoViz” is not a data repository (the datasets cannot be downloaded) but a covering tool making published or unpublished data visible, thus indirectly contributing to fostering data publication and reuse by archaeologists.

7 SHARING DATES. ACHIEVE REPRODUCIBLE RESEARCH FOR THE MIDDLE-UPPER PALAEOLOGIC TRANSITION IN THE CANTABRIAN REGION

Abstract author(s): Díaz-Rodríguez, Mikel (Grupo de Estudos para a Prehistoria do Noroeste Ibérico. Arqueoloxía, Antigüidade e Territorio - GEPN-AAT, Dpto. de Historia, Universidade de Santiago de Compostela; Department of Archaeology and Heritage Studies. Aarhus University; BIOCHANGE – Center for Biodiversity Dynamics in a Changing World, Aarhus University; CISPAC – Centro de Investigación Interuniversitario das Paisaxes Atlánticas) - Riede, Felix (Department of Archaeology and Heritage Studies. Aarhus University; BIOCHANGE – Center for Biodiversity Dynamics in a Changing World, Aarhus University) - Kellberg Nielsen, Trine (Department of Archaeology and Heritage Studies. Aarhus University; BIOCHANGE – Center for Biodiversity Dynamics in a Changing World, Aarhus University)

Abstract format: Oral

Interest in Open Science has grown significantly in recent years, particularly within Archaeology where the practice of sharing data and code has become more widespread. In this discipline, the analysis of evidence is crucial, but the nature of the evidence can lead to it being lost or destroyed. To mitigate this, preserving as much information as possible is key. Additionally, sharing the information with the scientific community can help foster new research and advancements. However, prior to sharing, the data may need to be cleaned and processed to ensure its quality. In this paper, we present a case study focused on a key episode in early prehistory – the transition from Neanderthals to *Homo sapiens* (45-30 ka BP), with particular focus on the Cantabrian region. We use this case study to present a workflow designed to make the data reproducible, from collection, via review and to sharing. All the archaeological sites inhabited by late Neanderthals and *Homo sapiens* have been logged in order to interrogate the disappearance of the former. Long-term demographic trends are accessed through summed probability density curves, which in turn are contextualised with reference to available stratigraphic and artefactual evidence. This case study promotes, we hope, reproducible research into palaeodemographic trends across this major transition period, and offers insights into the potential challenges associated with data and code sharing.

8 UNDERSTANDING THE UNWANTED: A DATABASE PROJECT ON ROMAN SEWERS

Abstract author(s): Le Bret, Jean-Baptiste (UMR5140 - Archéologie des Sociétés Méditerranéennes)

Abstract format: Oral

Water drainage structures are ubiquitous in Roman archaeological levels. Despite the increasing amount of research devoted to them, their analysis often takes the form of simple case studies of an archaeological site, or at most a city. The fragmentary nature of these studies makes it difficult to compare the networks observed, and accentuates the false impression that these installations are too heterogeneous to be the subject of a large-scale comparative study.

To address this problem, we are currently designing a participatory, open and scalable database on the Heurist programme. The project is in its early stages, but the body of the database has been completed, and over 500 Roman installations have already been included. Two distinct parts structure the data. The most important one includes objective and factual information, the other one includes information related to the typology of the Roman evacuations, which is under construction.

In this paper, I will focus on the importance of the preparation of the database project before its realisation, the choice of software for the creation of the database, and our ability to design datasets that are reusable by scientists and the general public

9 RECORDING AND EXPLOITATION OF CERAMIC DATA WITH SYSLAT

Abstract author(s): Munos, Sébastien (INRAP - Institut national de recherches archéologiques préventives; UMR5140 - Archéologie des Sociétés Méditerranéennes) - Manseri, Hakima (CNRS; UMR5140 - Archéologie des Sociétés Méditerranéennes) - Roure, Réjane (Université Paul-Valéry Montpellier 3; UMR5140 - Archéologie des Sociétés Méditerranéennes)

Abstract format: Oral

Syslat is a family of software applications dedicated to the recording, exploitation and analysis of archaeological excavation data. Developed since the 1980s within the ASM laboratory, Syslat promotes the standardisation of recorded data through the use of descriptive vocabularies shared by the various parties involved. Thus, the data recording and exploitation software is accompanied by reference dictionaries, developed in the framework of various programmes parallel to Syslat, at different times. The oldest of these tools is the DICOCER, “Dictionnaire en ligne des céramiques en Méditerranée nord-occidentale du VIIe s. av. J.-C. au VIIe s. ap. J.-C.”, whose updated version is available online (www.dicocer.cnrs.fr). Since its publication in 1993, it has enabled numerous research teams to record in a standardised manner the ceramic material discovered during excavations in the geographical area covered by this dictionary.

In this presentation, we will show the possibilities opened up by the standardised recording of ceramic data through the study of several archaeological sites excavated recently or in the past years, for which the ceramics have been processed and recorded according to the protocols of the DICOCER project. The secure hosting of the data on the Huma-Num infrastructure facilitates the collaborative work of archaeologists over time and makes it possible to propose research work involving several research teams and several archaeological sites. This presentation will also show the different tools offered by Syslat for the cross-referencing, comparison and analysis of ceramic data (CER, TYPOCER, COURBECER). We will also talk about the ongoing projects to update DICOCER, including the interoperability of DICOCER records with other platforms. The Syslat team is also considering the possibility of using other standardised reference typologies.

10 PRESERVING MEMORIES, PROTECTING HERITAGE: THE USE OF DATASETS TO ENHANCE LOCAL SHIPBUILDING TRADITIONS

Abstract author(s): Silveira Martins, Adolfo António (C.E.U.-Cooperativa de Ensino Universitário) - Martins, Adolfo (História, Territórios e Comunidades - CFE, Centre for Functional Ecology – Science for People & the Planet, Department of Life Sciences, University of Coimbra, at the NOVA University)

Abstract format: Oral

During the Iberian Discoveries (15th to the 17th-centuries), ships were agents of knowledge transfer between distant communities, and the analysis of their remains empowers the requisite of an efficient implementation of quantitative methods to build a more robust interpretation of the evidence and across disciplines.

Along with the archaeological study of these archaeological structures it implies the analysis from a multidisciplinary group of researchers. Focusing their attention on the immense collection of artefacts and consequentially producing of a large amount of data. In a substantial number of investigations this data is then reanalysed, stored and disseminated within different field of science to be used to identify parallels or gaps in knowledge. Therefore, it is imperative on each investigation to establish a workflow and a methodological criterion compliant with well established methods, to facilitate the knowledge transfer across disciplines.

In this presentation we will discuss the improvements on the general adopted criterion and the mechanisms to improve it by aiming to: reduce language accessing limitations, widening the data access across the communities and, especially to enhance the understanding of local / traditional nautical terminology. Thus, resulting on an alternative data dissemination approach, the rise of new scientific discussions, triggered the revisitation of past excavation and a better understanding of local shipbuilding traditions.

11 3D LASER SCANNING, A CONTRIBUTION TO THE PRESERVATION OF A 16TH CENTURY FORTIFIED TOWER IN MAASTRICHT, THE NETHERLANDS

Abstract author(s): de Jongh, Ineke - Knapen, Dirk (Arcadis)

Abstract format: Oral

In March 2019 a part of the 16th century city wall in Maastricht collapsed. The fortified tower near this part of the wall faced the same risk. To prevent the collapse of the tower the filling inside had to be removed to release pressure and strengthen the construction from the inside. The deformation of the tower had to be monitored.

We used a laser scanner aligned to fixed points near the tower to periodically create a 3D-scan of the site. By comparing these scans, the growing deformation could be monitored and located. To release pressure, the filling of the tower was excavated archaeologically. The research was interdisciplinary as an architectural historian also collected information. This information became useful to create a construction and restauration plan.

The excavation was carried out in several steps and exposed the inner construction of the tower. After every part of the excavation, we discovered unexpected walls and graffiti. The interior of the tower was also documented with 3D scanning technology. The excavation and 3D documentation resulted in new insights about the historical construction. The different fillings inside the tower were used to date different construction phases.

With 3D modelling we discovered that the deformation decreased. By removing the filling of the tower pressure decreased and it became possible to strengthen the structure from the inside. Together archaeology, architectural history and 3D scanning contributed to the preservation of the fortified tower. Finally, the obtained results and 3D-scans are going to be used to restore the collapsed wall and excavated tower. In this session we like to share our experience and bottlenecks we encountered.

DIGITALLY DIGGING DHASKALIO: PAYOFFS AND PITFALLS IN 3D GIS AS AN INTERACTIVE DATABASE

Abstract author(s): Campbell, Rosie (McDonald Institute for Archaeological Research, University of Cambridge) - Indgjerd, Hallvard (Museum of Cultural History, University of Oslo) - Boyd, Michael (Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute; McDonald Institute for Archaeological Research, University of Cambridge) - Meyer, Nathan (University of California) - Moutafi, Ioanna (Wiener Laboratory, American School of Classical Studies at Athens) - Renfrew, Colin (McDonald Institute for Archaeological Research, University of Cambridge) - Herbst, James (American School of Classical Studies at Athens)

Abstract format: Oral

This paper presents an example of a 3D GIS environment that incorporates site data in synthesis with image-based 3D models of each excavated stratigraphic context and built structures. The data were acquired during the 2016 – 2018 excavations of the Early Bronze Age (EBA) site of Dhaskalio, Cyclades, Greece. The recording strategy employed in the field included an extensive photogrammetry programme, which created the basis for this project. Both intra-site and micro-level recordings were made of the architecture, stratigraphic units and layers, and other features, giving a three-dimensional representation of each taphonomic event. Finds and samples, including structured chemical sampling of all surfaces, were also recorded in three dimensions.

Such a ‘true 3D GIS system’, encapsulating all the abilities of a traditional GIS, including data entry, database management, analysis and manipulation, gives access to all excavation data within a single platform, making the tool data-driven and research-oriented. This is built as an interface for running comparative queries across the trenches and aiding site interpretation by way of spatial analysis. Furthermore, it acts as an interactive database, where site photographs, specialist data and interpretations can be accessed in a single environment by multiple users. The overarching goal is to improve the integration of separate classes of archaeological data – 3D, 2D GIS, specialist finds data, photographs, descriptions, and legacy data – through the creation of a unified system that streamlines interpretation and analysis into a single project centred around 3D models.

The authors will discuss the experiences and challenges encountered when implementing the system and opening it for use by multiple project participants in the post excavation analysis and write-up phase. We aim to highlight the areas where the system added analytical value, but also pinpoint pitfalls and propose workarounds for future implementations.

A. FROM THE PREHISTORIC SITE TO THE CLOUD: THE IPHES-CERCA OPEN DATA APPROACH

Abstract author(s): Fontanals, Marta (Universitat Rovira i Virgili - URV; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA) - Sopesens, Javier - Bargalló, Amèlia (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV) - Del Bove, Antonia (Universitat Rovira i Virgili - URV; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA) - Gómez de Soler, Bruno - Revelles, Jordi - Rodríguez, Antonio - Pastó, Ignasi (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV)

Abstract format: Poster

The Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA, is a CERCA research centre of the Catalan Government on Prehistory and Human Evolution, had already done some steps on Open Science, according to the science policy trends. However, since the beginning of 2022, in the context of its accreditation as Maria de Maeztu Unit (Spanish Program of Centres of Excellence), an Open Data implementation plan is being implemented to improve open access and reuse of research outcomes and data generated by the IPHES-CERCA projects.

Being aware that drafting institutional policies are not enough for the real implementation of the Open Data, the IPHES-CERCA Open Data approach seeks the involvement of their researchers and technicians, in a bottom-up implementation process oriented to create specific resources for action.

This is based on the creation of an Open Science Working Group (OSWG) (www.iphes.cat/rri-committee), composed by representatives of all IPHES-CERCA Research Groups and a specific hired data steward. The OSWG boost open science and open data practices by providing the development of specific processes and tools for the IPHES-CERCA research data management under FAIR requirements, which have led us to develop concatenately: (1) drafting and setting up Data Management Plans (DMP) of specific projects through a specific DMP template based on the EU forms; (2) promoting the creation and fostering the deposit of datasets of funded projects in the IPHES-CERCA institutional repository CORA-RDR hosted by the CSUC (<https://dataverse.csuc.cat/>); (3) developing an own disciplinary Thesaurus and (4) creating an IPHES-CERCA Open Data Management policy, in accordance with our fields and our funding agencies.

The aim of this paper is to present the basis of the Open Data strategy that IPHES-CERCA wants to implement in order to discuss with the rest of our scientific community this process, still ongoing.

STAGING MARGINALITY: LINKING MARGINAL LANDSCAPE, SOCIAL POWER, AND SUBALTERN MATERIALITY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Jankovic, Marko (University of Belgrade) - Puddu, Mauro (University of Venice) - Gardner, Andrew (University College London) - Kamash, Zena (Royal Holloway, University of London) - Vanni, Edoardo (University of Siena)

Session format: Discussion session

The session focuses on the groups and individuals that were outside the privileged parts of society, in the position of systemic limitation of social power and agency. The character of the material traces left by the socially marginalized additionally hampers insight into their existences. While elites regularly articulated their power and positions also through monumentality, luxury and rare items, conspicuous modes of consumption, and highly visible performative behaviour, the underprivileged ones did not leave such easily recognized and publicly codified material traces of their actions. This perpetuates insufficient professional and public interest in and knowledge of marginalized social categories, in turn creating a flawed and incomplete perception of the past.

The processes of accretion and disaggregation around the emergence and collapse of power structures across Europe (such as the Roman Empire), can be observed well through the lens of marginality. Marginal structures – and landscapes – change rapidly, collapse but just as quickly reconstitute themselves in a new relational conformation, or disappear completely, in a continuous discontinuity.

Paradoxically, it is through the monopoly of marginality that societies guarantee for themselves the economic or military control of a socio-economic conformation. And it is only by understanding these peripheral spaces and the practices and choices taken by the communities that occupied them that one can understand the complex structuring of social places.

To recompose the brokenness between those marginal landscapes and contemporary societies, this call for papers aims to stimulate a debate around the social dynamics of the construction of significant marginalised spaces in the context of strong power relationships. In this session, we welcome all scholars interested in tackling marginality between Iron Age and late antique Europe from the following perspectives: ecology and ecofacts, gender, power and materiality, spaces control, centralization and peripheralization of places, monopoly, mobility, violence, vanishing historical landscapes.

ABSTRACTS

1 REDESIGNING MONTI AURUNCI BETWEEN LANDSCAPES OF UN-MARGINAL MARGINALITY

Abstract author(s): Saccoccio, Federico (University of Pisa) - De Pieri, Francesca - Zocco, Simone (Sapienza University of Rome)

Abstract format: Oral

The Monti Aurunci is a mountain range located in Southern Latium, and it overlooks the Liri-Garigliano Valley, a major joint area between Lazio and Campania. The range proved to be fundamental for contacts between different cultures in pre-roman times and a focal point during the first phases of the Roman expansion towards the South of Italy in the 4th and 3rd centuries BC. The historical importance of the surrounding region has gradually overshadowed the relevance of the Monti Aurunci, often therefore perceived as geographically and economically marginal.

In virtue of their central position, the Monti Aurunci might instead have played a pivotal role in testing and defining strategies for land assimilation and their transfer from the Italic peoples to Rome. Additionally, the Aurunci range have been cardinal in the definition of the roman colonial space during the 4th and early-3rd century BC, especially concerning the economy of these colonies.

Recent considerations allow us to redesign the perspectives on the Monti Aurunci, overturning them from being virtually empty and marginal to a 'diaphragm' of the activity on the broader region. Through this presentation, we will provide elements suggesting the presence of a large portion of ager publicus in the Monti Aurunci. We will also discuss the hypothesis that this was divided into a few functional districts, likely marked by sacred areas, strictly linked to the region's mobility.

Starting from this hypothesis, we will also try to sketch the general evolution of the lands at issue: from ager publicus to the imperial properties and the creation of the saltus until the final assimilation as part of the Popes' patrimonia in the Middle Ages.

2 THE MATERIAL AND IMMATERIAL CULTURE OF THE SUBALTERN CLASSES THROUGH THE STUDY OF LATE REPUBLICAN UNDERWATER CONTEXTS

Abstract author(s): Barthélemy, Filippo (University of Siena)

Abstract format: Oral

The Mediterranean has always represented a multifaceted and multidimensional space, where man and environment have related to each other. Through this space, societies, economies, cultures, and symbols have interacted over time. Its role as a connector and as a network linking different tangible and intangible artifacts has made of it an instrument of the socio-economic expansionist ambitions of power holders. Shipwrecks provide pivotal traces of the rise in Roman control of the sea during the late second century BC. They are silent testimonies of trades, exchanges, and movements of people and products, which would remain otherwise unknown. Indeed, these enclosed contexts provide valuable traces concerning the ship's equipment and the goods carried by vessels before their defunctionalization. Furthermore, they give us the possibility to look into the realities of the subordinate classes that were active in the trade routes and produced goods for economic exchanges. The different types of amphorae found in the Late Republican wrecks bring to light transformations in market needs that are reflected by material culture. The latter shows several processes of hybridization in shapes that can be connected to transformations concerning commercial needs and aims; a connection that can be built by analyzing the updated features and their new functions. Such an analysis, moreover, opens the way to further hypothesis, regarding the causes that have determined morphological changes. Using written sources and case-studies, the paper wants to investigate the transformations in the material culture of the subaltern working classes that produced the goods for commerce. It tries also to investigate the reasons of these transformations, and hence some processes of social change they have taken place in the Mediterranean landscape.

3 MARGINAL IN DEATH: CHILDREN BURIALS IN REMESIANA EASTERN NECROPOLIS (SERBIA)

Abstract author(s): Jankovic, Marko (University of Belgrade - Faculty of Philosophy)

Abstract format: Oral

The Remesiana eastern necropolis is a subject of an ongoing archaeological investigation since 2018, although some sporadic finds were noted in previous decades. The necropolis is dated by using coinage and analogies in the 4th century AD, which puts it right at the period of early stages of Christianity in this area. Unlike some other necropolis in the vicinity, this one is specific not only because a great number of luxurious and rare items were discovered in a great number of graves (gilded and silver fibulae, silver buckles, heavy miliaria coin, golden pins...) but also because of its unique burials' architecture. A several of mensa type graves and a memoria were discovered so far, all indicating a great effort, time consumption and care for the dead. The most of the rest of the graves were actually gravitating towards them, some literally just beside its outer walls.

Most of the deceased, so far, are children or adolescents, and there are at least 8 burials of newborn or stillborn children at the necropolis. Unlike the other burials from the necropolis, these are pretty specific since there is no evidence that they had the same attention. They are buried in shallow graves that most likely had no visible markings, since a few of them were seriously damaged by other graves. Also, there were no single object found in any of these burials, and so far, it looks like they were all buried close to each other.

Since there are evidence that this necropolis was simultaneously used by Christians and pagans, the interpretation could be harder than usually. These children were marginalized within their society and treated differently than most of the deceased, so this paper aims to give some of the answers to that issue.

4 „WHERE ANYTHING GOES“: PROSTITUTION AND SEXUALITY IN 19TH-20TH CENTURY LISBON

Abstract author(s): Leão, Afonso - Pacheco, Susana (CFE-HTC NOVA University of Lisbon)

Abstract format: Oral

In 1858, Portugal legalized prostitution in Lisbon and required sex workers to register as such, earning them the label of “tolerated”. Despite society considering the practice a “necessary evil”, sex workers faced moral judgment and a series of regulations aimed at promoting public health. These regulations remained in place for over a hundred years, ending only during the fascist regime in 1963. However, due to the shame surrounding the matter, many records were destroyed in an effort to erase these women from recent history.

But not all is lost. Some records still remain, providing valuable information that has allowed us to pinpoint the locations of houses and brothels. In Lisbon, hundreds of archaeological excavations are conducted each year, but unfortunately, Portuguese academia has neglected the importance of preserving contexts from the 19th and 20th centuries. Without much safeguarded archaeological information one can only wonder about the life these women had inside

these houses, begging the question: What can the archaeological record tell us about the daily life of these women and what can the written records tell us about their living conditions, and how were these women perceived by society?

The present study sheds a light on a site in Lisbon where the evidence of prostitution was uncovered through the examination of archaeological and anthropological remains. This new evidence has provided us with a fresh perspective on the lives of these women and a deeper understanding of the regulations imposed on them and the impact they had and how and where they lived. The material culture discovered at the site allows us to reconstruct the history of these women and raises important questions about the complex nature of prostitution and its continued existence today.

605 MULTI-SCALAR LIVES IN THE EARLY MEDIEVAL NORTH ATLANTIC

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Cartwright, Rachel (University of Minnesota) - Leggett, Sam (University of Edinburgh)

Session format: Regular session

Often the North Atlantic world is seen as the periphery – with the Mediterranean and Continental Europe at the centre during the first millennium AD. This session seeks to re-centre the Early Medieval North Atlantic, and the everyday lives of people around the North and Irish Seas using an interdisciplinary and multi-scalar framework. We ask how did the major socio-environmental shifts of c. 400-1100 (e.g. the decline of the Western Roman Empire, migrations and mobility, Medieval Climate Anomaly etc.) impact communities living in the region? For instance, how does evidence for migration in this region bear out in terms of localized lived experiences? Are there signs of resilience to climatic shifts? How did the development of long-distance trade and cross-cultural contact shape North Atlantic communities? How did people cope with raiding activity and diasporic settlements?

These questions (amongst others) require a truly multi-scalar and multi-disciplinary approach to weave together narratives strands of lived experiences in the Early Medieval North Atlantic. Therefore we welcome papers utilizing (but not limited to) biomolecular archaeology, computational approaches, landscape studies, and funerary archaeology on both local and large-scales to (re-)people the past of these seemingly liminal zones and networks and stimulate important discussions on future research directions for the region.

ABSTRACTS

1 TEACH A MAN TO FISH: BIOARCHAEOLOGY AND LIVED EXPERIENCES IN THE EARLY MEDIEVAL NORTH ATLANTIC

Abstract author(s): Leggett, Samantha (University of Edinburgh)

Abstract format: Oral

This paper presents preliminary findings from the ArchaeoFINS (medieval Archaeology of Fishing around the Irish and North Seas) project which is focused on human mobility, cross-cultural contact, and the re-introduction of marine fish consumption at scale in early medieval Europe. Scotland and its islands have been identified as a watershed region for the re-introduction of marine consumption in Britain, and often the “Viking Age” and Christianization are credited with this shift in foodways. In this paper the link between Scandinavian settlement and marine consumption are interrogated using multi-scalar data and interdisciplinary approaches.

The project asks:

- When do fish re-enter diets in Scotland at a scale detectable by biomolecular techniques?
- Does this differ regionally within Scotland and how does this compare with Ireland, Wales and England?
- Do shifts in fish consumption correlate with Christianisation or large-scale migration events (e.g. Scandinavian settlement)?

Bioarchaeological “Big Data” from across the early medieval North Atlantic are combined with new isotopic data from sites in Scotland to show the nature and speed of change in fish consumption around the Irish and North Seas, and how this impacted communities.

2 THE MEDIEVAL WAY OF CREMATION: INVESTIGATING THE CREMATION CONDITIONS USING FTIR-ATR AND CARBON AND OXYGEN ISOTOPE ANALYSIS ON CREMATED BONES

Abstract author(s): Stamataki, Elisavet - Veselka, Barbara (Vrije Universiteit Brussel) - Salesse, Kevin (Masaryk University) - Kontopoulos, Ioannis (University of Copenhagen) - Capuzzo, Giacomo (Université Libre de Bruxelles) - Hlad, Marta (Vrije Universiteit Brussel) - Dalle, Sarah (Ghent University) - Sengeløv, Amanda (Université Libre de Bruxelles) - De Mulder, Guy (Ghent University) - Snoeck, Christophe (Vrije Universiteit Brussel)

Abstract format: Oral

While cremation was the dominant funerary practice in Belgium during the Bronze and Iron Age (ca. 2100-52 BCE) through to the Roman period (ca. 52 BCE- 406 AD) only a few cremation cemeteries (up to 700 AD) have been discovered from the Early Medieval period. During the Early Medieval period, inhumation was the main funerary rite, and cremation was used to a lesser extent from the fifth to seventh centuries. Recent developments in Infrared Spectroscopy and carbon and oxygen isotope analysis indicate that the study of cremated bones provides important information regarding pyre technology and body management in past societies.

The aim of this study is to assess the intra- and inter-site variability in cremation conditions during the Medieval period, using Attenuated Total Reflectance-Fourier Transform Infrared Spectroscopy (ATR-FTIR) and carbon and oxygen isotope analysis on burnt human remains from Belgium. For this reason, three cemeteries from the Early Middle Ages were selected and over 300 samples were analysed. The spectroscopic and isotopic results of the cremated remains indicate that there is a high degree of homogeneity in cremation conditions during the Medieval period. However, statistically, significant differences can be observed when comparing the data of the Early Medieval period to the Roman period (ca. 52 BCE-406 AD), indicating that the way cremation was performed changed between the two chronological periods from the same area. This inter- and intra-site variability adds to our understanding regarding the pyre technology, body treatment, and pyre management at the studied sites and the use of fire in funerary rituals.

3 PEOPLE, PLANTS, AND ALGAE: UNDERSTANDING PICTISH LIFEWAYS THROUGH MICROBOTANICAL AND MICROALGAE ANALYSES

Abstract author(s): Prado, Shalen (McMaster University)

Abstract format: Oral

Historical and archaeological research on the Picts, the inhabitants of Scotland during the first millennium AD, has steadily grown in recent decades and significant contributions have been made to our understanding of Pictish settlement traditions and overall chronology of the Pictish period. Research focused on how the Picts related to their environment, however, is rare (e.g., Jones et al. 2021). This is partially influenced by taphonomic challenges within Scotland's environment which often inhibits the preservation of organic residues (e.g., plant matter) and has limited our understanding of Pictish plant use. Microbotanical residues (e.g., phytoliths and starch grains) offer more robust proxies to understand Pictish-environment relationships and in this paper, I present microbotanical and microalgae (e.g., diatom frustules) evidence from several prominent Pictish sites (e.g., Burghead & Tap o'Noth). The microbotanical and microalgae residues are used to understand use of space (e.g., activity areas) and land use (e.g., agricultural regimes) at Pictish sites, allowing us to investigate the lifeways of the Picts and discuss more broadly how people in the Early Medieval North Atlantic world lived. This fills a substantial lacuna in our knowledge of everyday lifeways of the Picts, and I examine this data at the regional (inter-site) and community (site) scales to tease out architectural preferences, crop processing, and pastoral regimes throughout Pictland. Overall, I investigate human-environment relationships in Pictland and ask how the Picts established, maintained, and concluded relationships with various plant and algae communities across Pictland.

4 AGRICULTURAL ADAPTATION IN EARLY MEDIEVAL NORTHUMBRIA

Abstract author(s): Wolff, Alice (Cornell University)

Abstract format: Oral

This paper presents in-progress results of an archaeobotanical study conducted at Bamburgh Castle, Northumberland, UK. The site functioned as the capital first of the early medieval kingdom of Bernicia and then of Northumbria. This paper considers environmental evidence for climate change in northern England during the early medieval period alongside archaeobotanical evidence for agricultural adaptation. Preliminary archaeobotanical results from this site suggest a dramatic shift in cereal cultivation strategies in the 6th century CE, possibly as a response to the effects of the Late Antique Little Ice Age. While late Roman and post-Roman samples at the site show evidence for primarily wheat production, 6th to 8th century samples show increases in barley and oat and a decrease in wheat. Preliminary results of archaeobotanical analysis of the numerous weed species found in these samples will also be considered as evidence for changing agricultural strategies in northern England in this time period.

5 REGIONAL AND FAR-REACHING MOBILITY AND SIGNS OF LOCAL INTER - OR INTRACOMMUNAL VIOLENCE IN NORWAY DURING THE VIKING AGE

Abstract author(s): Strand, Lisa (NTNU)

Abstract format: Oral

Prior archaeological research has revealed that there were migration and mobility from Norway towards the Insular world, Britain and Ireland and the continent during the Viking Age, however, such singular focus masks communal or regional features that is only revealed through the juxtaposition of results from biomolecular, osteological and archaeological studies.

In recent years, the interdisciplinary approach has been applied when analyzing human remains from the Viking Age, and results from these studies, from a Norwegian perspective, has revealed not only a high level of individual mobility, especially identified from the coastal regions, but also tentatively intra and/or intercommunal social complexities regarding agency and ethnicity during this period. Similarly, the identification of high degrees of interpersonal violence on both women and men, and its implication on the degrees of steepness in the social pyramid – or its indication of the level of representation of central authorities in Norway during this period could well be a result of, or be connected to the overall level of mobility identified during this period.

This paper will, through the osteobiographical approach, deduce results from biomolecular, osteological as well as through archaeological context, and discuss how impact of far-distance as well as regional mobility may have had in shaping communities in Viking Age Norway.

6 SETTLING DOWN IN THE NORTH ATLANTIC: EVERYDAY LIFE IN VIKING AGE ICELAND

Abstract author(s): Cartwright, Rachel (University of Minnesota)

Abstract format: Oral

As one of the last landmasses to be settled in the world, Iceland represents a unique opportunity to study the establishment of a society in a territory previously devoid of cultural remains. This paper will explore various aspects of everyday life in the first hundred or so years after Iceland was settled during the Viking Age. The things people do and create in their everyday lives, while seemingly mundane, can have an extraordinary effect on individuals and society. Within everyday life, fundamental aspects of identities are produced, represented, or transformed. Whether through the use of personal ornamentation, the production of textiles, or the shaping of domestic spaces, aspects of identity can be seen through the material culture that people create and are created by, conditioning the way in which reality is experienced on a daily basis. This paper will examine Viking Age houses, burials, and their material assemblages for what they can say about the way people perceived themselves and the identities they portrayed. This paper takes a multi-scalar approach to the study of the early Icelanders, moving from the small scale of individual items (e.g. brooches, textile equipment, tools) or specific sites to the larger-scale of the region known as the Southern Quarter. Drawing on several aspects of daily and ritual experiences, this paper draws broader conclusions about life in early Iceland.

7 A SETTLEMENT-HISTORICAL REVIEW OF COMMENSALITY IN SCOTIA SCANDINAVICA

Abstract author(s): Macniven, Alan (The University of Edinburgh)

Abstract format: Oral

The economy of the medieval Norse world remained socially embedded long after the nominal introduction of coinage. This appears to have been the case in both the Scandinavian homelands and more distant parts of the diaspora. Excavations at 'central places' like Orphir in Orkney illustrate the continued importance of commensality in the centuries after the Viking Age, with rents and other payments rendered largely in kind for conspicuous consumption by the resident jarls and their guests. While the archaeological material suggests that much of this produce was sourced locally, there has been relatively little study of the environmental-historical impact of these cultural practices on the cognitive landscapes of Scotia Scandinavica.

This presentation aims to contextualise the traces of agricultural production, industrial activity and landscape management preserved in the assemblages from high-status sites such as Orphir, Birsay, and Kirkwall, by reviewing how they are reflected in the Old Norse components of the surrounding namespaces. Particular attention will be given to how Scandinavian innovations have embedded and survived compared to more longstanding staples. In so doing, it will also explore how information from archaeological site reports can be reconciled with other source materials ranging from Old Norse literature to rentals, maps and satellite imagery.

8 CONNECTIONS AND DIVISIONS IN EARLY MEDIEVAL GALLOWAY

Abstract author(s): Craig, Orla (University of Glasgow)

Abstract format: Oral

The early medieval period in Galloway in South-West Scotland sees the region undergo a radical transformation. Shortly after the last known record in 837 CE, Galloway falls out of the control of the Northumbrian kingdom, giving way to activity from the Britons, Vikings and the Gall-Gaidhil. By the time Galloway reappears on the historical record in 1126 CE, each of these communities have coalesced into the Lordship of Galloway. In the middle of this undocumented period, around the year 900 CE, a massive hoard of gold and silver is deposited. The 2014 discovery of this, the Galloway Hoard, has prompted fresh investigation into this little-understood period in this part of Scotland. This paper will present some of the results of an interdisciplinary landscape PhD project on The Archaeological, Landscape and Historical Context of the Galloway Hoard. This project brings together archaeological, place name and antiquarian evidence to show that this area on the periphery of the Irish Sea Region was a place of cross-cultural negotiation, evolving political boundaries and the formation of new communities.

9 HIGHLY FRAGMENTED, INTENSELY CONNECTED: DEVELOPING PARADIGMATIC APPROACHES TO THE ARCHAEOLOGY OF THE EARLY MEDIEVAL NORTH CHANNEL, C. 500-800 CE

Abstract author(s): Kniaz, Sophia (University of St Andrews)

Abstract format: Oral

Studies of the Early Medieval North Atlantic are often characterised by divisions, both between disciplines (i.e. archaeology, history, and landscape studies) and in research conventions (e.g. regionalised typologies), such that archaeological investigations can become confined within modern political and/or terrestrial boundaries which their historical subjects exceeded. This is especially evident in relation to the early medieval North Channel; although the seascape and its medieval communities were intimately inter-connected (at its narrowest, the strait is only 19km wide between Torr Head and the Mull of Kintyre), scholarship of the region has become compartmentalised according to the distinct archaeological programmes of Scotland, Northern Ireland, and the Republic of Ireland.

Numerous investigations of early medieval communities which spanned the North Channel, such as Dál Riata and the Columban monastic network, have highlighted the need for shared archaeological typologies and investigations which facilitate discussions across the region (Armit 2008; Werner 2007). In response, this paper proposes the development of an interdisciplinary, multi-scalar, and holistic “North Channel paradigm” within early medieval North Atlantic scholarship. Taking inspiration from the flowering of methodologies, theoretical frameworks, and new research directions within scholarship on the ancient Mediterranean (especially in the two decades following Horden and Purcell’s “The Corrupting Sea”), this paper explores the value of developing similar maritime paradigms for the North Channel, emphasising the fluidity and “borderless-ness” such approaches bring.

The paper employs an interdisciplinary methodology and post-processual archaeological framework to explore everyday lives across the North Channel, examining case studies including early medieval Iona, settlement forms, and material culture (e.g. Continental E-ware ceramics) in south-western Scotland and north-eastern Ireland. It offers a dynamic and theoretically-engaged [re]centering of the North Channel, and sheds light on the complexities of past lived experience in a highly fragmented and intensely connected North Atlantic landscape.

10 KNIFE ASSEMBLAGES: UNEARTHING THE INTRICATE COMPLEXITIES OF ANGLO-SAXON INHUMATION BURIAL AND VARIED EXPRESSIONS OF PERSONAL IDENTITIES

Abstract author(s): Górkiewicz Downer, Abigail (University of Chester)

Abstract format: Oral

Knives are ubiquitous inclusions in early medieval inhumation burials throughout north-western and west central Europe and are even found in many burials as the sole offering; however, little has been done to explore the significance of their inclusion in inhumation graves. Previous studies on early Anglo-Saxon burial practice have provided evidence of a more complex story behind funerary rites, implying that knives were destroyed prior to burial, often with broken blades or complete fragmentation. My dissertation examining the spatial context of objects within inhumation burials across Alsace, Kent, and East Anglia has also suggested that knife-destruction/damage may not be so uncommon. However, meaning behind not only knife-destruction, but knife-meaning within early medieval inhumation graves is still not well understood.

This presentation applies my recently developed methodology seeking to understand the diverse meanings behind objects regularly interpreted as amulets by archaeologists to a subset of 254 knives from 6th- to 7th-century inhumation graves from Dover Buckland (Kent). While knives are not often considered amuletic, this paper highlights the efficacy of this approach when applying to any object type. Furthermore, this paper illustrates that this approach can not only be useful in understanding complexities of early medieval funerary rites in Kent, but it also provides a base to

further exploring intentionality behind the deposition of knives in burial, their purpose, and potential connections to early medieval cosmologies, and more importantly, as multifaceted expressions of identity.

606 HEARTH AND HOME: DIACHRONIC APPROACHES TO THE ARCHAEOLOGICAL RECORD

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Dobos, Adrian (Institute of Archaeology “Vasile Parvan”) - Chu, Wei (Faculty of Archaeology, Leiden University) - Ciornei, Alexandru (Institute of Archaeology “Vasile Parvan”)

Session format: Discussion session

Hearths and other fire-related activity areas are among the main features of archaeological research as they are often easily observable and supposed as focal points of structures, spatial organization, and associated domestic activities such as workshops or butchering zones. They are also intimately intertwined with technological systems. However, despite their visibility, the relationship of hearths and other heating activity areas to fossilized behavior and technology is often ambiguous across space and time. This is partly because archaeological perspectives are often segregated according to subdiscipline.

Our aim is to create a venue to obtain and share diachronic evidences of how fire is examined within the archaeological record in order to understand the role that fire has played in changing technologies and social organization. We welcome submissions related to excavations and experimental archaeology, particularly those that reconstruct taphonomic disturbances and the contextual aspects of fire but also theoretical contributions.

Our undertaking builds on a research project (TE99 FIRE: Experimental investigations of stone artifact burning)

ABSTRACTS

1 WHAT CAN BURNED FLINT TELL US ABOUT FIRE USE? A CASE STUDY ON THE UPPER PALEOLITHIC OF ROMANIA

Abstract author(s): Dobos, Adrian - Ciornei, Alexandru (Institute of Archaeology “Vasile Parvan”) - Chu, Wei (Leiden University) - Cordos, Cristina (Institute of Archaeology, Iasi)

Abstract format: Oral

Humans likely manipulated fire long before they had full control over it. Paleolithic fire residues have been reported in sites as early as the Middle Pleistocene, and have been investigated using a variety of techniques: fuel analysis, micromorphology, infrared spectroscopy. However, the research on fire in the Paleolithic remains a field with numerous still unanswered questions.

We report here on the results of a non-destructive method aimed at determining the fire particularities through the study of burned lithics. We selected assemblages with burned lithics from two Upper Paleolithic sites from Romania and knapped the same raw materials in the laboratory. The blanks produced were exposed to different temperatures and for various time intervals in a furnace, in the attempt to replicate different types of fire (i.e. cooking, overnight).

The parameters of the lithics were recorded before and after the controlled heating following several criteria: density, color, surface, and piece integrity, to identify the temperature thresholds when changes occur. Coloration is a poor predictor of firing temperature, as it appears at low temperatures, whereas surface cracks and density loss can be better correlated to higher temperatures.

Our research has implications on fuel economy research in the Upper Paleolithic, as well as on the behavior related to the fire. Aside from determining the fire temperatures and duration, additional activities can be identified: hearth re-use, throwing lithics into the fire.

2 AN OVERVIEW OF UPPER PALEOLITHIC COMBUSTION FEATURES IN EASTERN ROMANIA

Abstract author(s): Cordos, Elena (Iasi Institute of Archaeology, Romanian Academy) - Anghelinu, Mircea (Valahia University) - Händel, Marc (Austrian Archaeological Institute, Austrian Academy of Sciences) - Niță, Loredana (Valahia University) - Buchinger, Norbert (Austrian Archaeological Institute, Austrian Academy of Sciences)

Abstract format: Oral

The macro- and microscopic study of hearths in archaeology has long proven as a productive pursuit, as it provides insights in both multiple aspects of past behaviors, as well as the environmental settings in which they took place. Combustion features are often easy to recognize in archaeological archives due to the alternating effect of the flame and/or high temperatures on different organic and inorganic materials. Unambiguous evidence includes spatially constrained patches of burnt, i.e. oxidized, sediment, in the best case with preserved concentrations of burnt objects,

or obvious constructions including pits and stone arrangements in connection with burnt interfaces and material. For Paleolithic sites, however, which have often been exposed to a myriad of post-depositional processes over long periods of time, the former presence of such features is sometimes only indicated by amorphous scatters of burnt objects, such as charcoal, ash, burnt artifacts, or burnt faunal remains. Yet, in many cases well-preserved hearths were discovered and documented.

Our contribution aims at reviewing the existing data regarding combustion features at Upper Paleolithic sites in east Romania. The area is well-known for the relatively high number of sites assigned to this period. We focus on recently excavated multilayered sites such as Bistricioara-Lutarie III in the Eastern Carpathians and Cotu Miculinti in the Middle Prut valley, which provide valuable insights in the local variability of Upper Paleolithic hearths, as well as in preservation and formation aspects. The aim is a standardization of available field descriptions to enable consideration of other sites in order to reveal potential diachronic trends of the various types of combustion features.

3 SOME REMARKS ON HEARTHES AND HOMES IN CRETE

Abstract author(s): Di Biase, Federica (Università degli Studi di Salerno)

Abstract format: Oral

The purpose of this paper is to shed light on the role of fire in domestic contexts from Crete during the late Classical and Hellenistic periods. In particular, I want to highlight which information on hearths is possible to gain from the study of the current bibliography, which questions remain unanswered and which paths can be followed to approach this topic. By focusing on some key case studies my aim is to suggest possible uses of fireplaces and the multiple destinations of rooms equipped with fixed hearths. Findings from houses in Crete testify, indeed, that several typologies of indoor fixed hearths were highly widespread on the western, central and eastern regions of the island. Although the well-known general absence of stratigraphic excavations makes it hard to analyse the function of the fixed hearths in detail, I want to point out that several remarks are possible considering their morphology (shapes, sizes, materials) and the different strategic locations inside the room. A quite consistent homogeneity in terms of fireplace typology choices occurs at site level, while on a Cretan scale regional identities raise several problems.

4 INVESTIGATING A GREEK KITCHEN FROM THE LATE ARCHAIC OCCUPATION AT EMPORION (EMPÚRIES, L'ESCALA, NORTH-EASTERN SPAIN) THROUGH INTERDISCIPLINARY ANALYSES

Abstract author(s): Belarte, Maria Carme (ICREA and ICAC) - Mateu, Marta (ICAC) - Portillo, Marta (IMF - CSIC) - Saorin, Carme (University of Barcelona) - Pecci, Alessandra (ERAAUB, IAUB, INSA-UB) - Gomar, Ada (IMF - CSIC) - Santos, Marta - Castanyer, Pere (MAC-Empúries) - Marzoli, Dirce (DAI. Abt. Madrid) - Tremoleda, Joaquim (MAC-Empúries)

Abstract format: Oral

Fire installations, related implements and food processing remains are widely used to define domestic activities and organization of space in any period. In some specific cases, cooking facilities are also used to define cultural traits. This is the case of a peculiar type of ancient Greek kitchens, composed by a specific set of structures that are well defined. However, these are not frequently attested in ancient Greek settlements.

At the Neapolis sector of the Empúries archaeological site, a set of earthen cooking installations composed by a small oven and a stove, dating from the last quarter of the 6th century / beginning of the 5th century BC, has been recently attested. Its location as well as the related archaeological remains suggest a possible use devoted to ritual or commensal activities. The function of this space would be related to a sanctuary area that the excavations allow to locate in the northern sector of the nucleus, in the vicinity of the access to the ancient natural port. A systematic sampling for interdisciplinary analyses (phytoliths and calcitic microremains, thin section micromorphology, Fourier Transform Infrared Spectroscopy and chemical analyses) has been carried out to obtain more information on the construction process, uses and functions of these structures and the building where they are located. The first results of the present study and their archaeological significance are presented and discussed here.

LINKING DATABASES FOR COMPARING RESEARCH: SHOW YOUR FORTIFICATION INFORMATION SYSTEM [COMFORT]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Loy, Anna (Christian-Albrechts-Universität zu Kiel - CAU) - Ibsen, Timo (Centre for Baltic and Scandinavian Archaeology - ZBSA) - Bernard, Loup (Université de Strasbourg; CNRS UMR7044) - Nakoinz, Oliver (Christian-Albrechts-Universität zu Kiel - CAU)

Session format: Regular session

The proliferation of web-based geographic interfaces for the investigation of archaeological phenomena naturally leads to the conclusion that super-regional perspectives can now be assembled for numerous archaeological phenomena. Hillforts or fortifications are one of the clearest examples of this trend with many regional and national scale compilations being made available. The focus of these databases varies from heritage management catalogues to curated academic and scientific collections and touristic information. At a round table organized at the EAA's annual meeting in Budapest 2022 we sought to discuss the possibilities for a pan-European database, metadatabase or unified access point, in terms of both theory and practicality; as well as how such a system might be used to shape future research.

In this session now we would like to get to know your database, collection, GIS, or other catalogued data on fortifications. Which technology are you using? Which information is considered and how are the data structured? What reasons lead you to your decisions? How is your database embedded in scientific workflows and in institutional architectures? Do you think it might be amendable for use in a European-wide system? Which challenges are you facing?

The session aims to connect specialists and interested scholars who use and moderate hillfort- or fortification-specific databases. Presenters are requested to give a general overview of their system and data and elaborate more detailed on the structure the data is processed in.

ABSTRACTS

1 FAIR DATA FOR FORTIFICATIONS: ANCHORING BUILDING GUIDES IN PAST AND FUTURE

Abstract author(s): Turner, Daniel (KNAW-DANS; Leiden University) - Horik, Rene (KNAW-DANS) - Brysbaert, Ann (Leiden University; Netherlands Institute at Athens)

Abstract format: Oral

This paper addresses the need for an efficient unified platform for linking databases and practical protocols for digitising archaeological features through a series of limited-use concept episodes (LUCes, pronounced “luckies”). LUCes describe from start to finish the process of digitising features commonly encountered by field archaeologists under time and budget constraints. ‘Limited’ and ‘episodic’ are used deliberately to signify all-in-one guideline packets that are digestible (i.e., not needlessly complicated) and convertible (i.e., relatable to the most common scenarios encountered in cultural resource management). Legacy data from a desktop survey of early Aegean fortifications conducted at the height of the COVID-19 pandemic will serve as the first of these LUCes. The grand intent behind this and similar initiatives is to offer viable solutions to protect, record, store, and disseminate rapidly diminishing and at-risk cultural heritage, namely built-stone, rock-cut, and earthen architecture that cannot be sustainably studied without digital methods. On a practical level, LUCes—or any guide, manual, or other instruction kit for field archaeologists for that matter—need not be exhaustive or perfect. They must, however, be durable and viable. In other words, we must detail affordable, readily available, teachable solutions that can be deployed with technology and training that is already in use within the majority of training spaces for cultural heritage managers: academic, professional, and avocational. Citizen science is a powerful tool while we await advances in artificial intelligence, and the much sought after push for FAIR and Open Science data has never been more crucial for sustainable cultural heritage management in a rapidly changing world.

2 LINKED OPEN ARCHAEOLOGY FROM FRANCE: ARKEOGIS, ARKEOPEN, OPENARCHAEO AND THE MASA+ CONSORTIUM

Abstract author(s): Bernard, Loup (Université de Strasbourg; CNRS UMR 7044; Consortium MASA+)

Abstract format: Oral

This paper will emphasise on the ArkeoGIS online WebGIS and its open version ArkeOPEN and will also present the consortium of French Archaeologists and Archivists MASA+, insisting on the possibilities offered by OpenArchaeo and Nakala in order to link existing projects.

As in many countries, databases about hillforts -and oppida- began to exist with punch cards and have been implemented and rewritten several times since then. Nowadays, several tools offer access to basic data (where/when/what) but also to more detailed data (pictures, plans but also typologies). Semantic web tools help to link these different online solutions, and to create powerful queries online. The paper will present some of those tools and extend the discussion to other problems.

So far, France has an excellent infrastructure (Huma-Num IR*) that hosts those data and make it possible to share without the risk of losing the work and archives at the end of the founded project. All presented tools are FAIR if not Open and sustainable for the near future, interoperating with other European projects is already possible.

3 **A MULTI-USER ONLINE DATABASE FOR HILLFORT STUDIES: THE EXAMPLE OF THE HILLFORTS ON THE DAUGAVA RIVER (INHILLDAUGAR)**

Abstract author(s): Vyazov, Leonid (University of Ostrava; Centre for Baltic and Scandinavian Archaeology - ZBSA) - Schneeweiß, Jens - Ibsen, Timo (Centre for Baltic and Scandinavian Archaeology - ZBSA)

Abstract format: Oral

Contemporary hillfort research uses a large amount of multidisciplinary data from various sources, including archival information, records of archaeological excavations, remote sensing, palaeoenvironmental studies, etc. The management and integration of this diverse data require a flexible tool that is also suitable for analysis. Varying degrees of data accuracy as well as the frequent use of subjective and interpretative cultural and chronological attributions in archaeological contexts increase the challenges for such a data management system.

In our presentation, we present a web-based and GIS-supported database for multiple users that contains cultural and typological interpretations and relative chronological sequences as well as absolute dates and geodata. It is our solution for an international cross-disciplinary system for the integration of data extracted from hillforts. It is based on the use of a graph database (Neo4j) that allows us to store, analyse and manage complex relationships between archaeological features, their context, and interpretations in an intuitive but sophisticated way. The graph structure of our database corresponds ideally to the complicated structure of archaeological records. It allows different assemblages (sites, occupation layers, artefacts, archaeological cultures, etc.) to be treated separately, taking into account data with different levels of accuracy. Newer data enhance the older ones instead of replacing them. The functionality of our multi-user system includes data mapping, visualization, selection, and processing of archaeological data and their relationships; furthermore, the analysis tools offer a clustering according to the attributes of the registered objects as well as the calculation of chronology curves based on the summed probability distribution of the 14C data. Our database is being tested on hillforts along the Daugava River in Latvia that are currently being studied in an international research project („Interdisciplinary Hillfort Studies at the Daugava River: Merging and Decoding Archaeological, Environmental and Linguistic Data“ - INHILLDAUGAR).

4 **LATE BRONZE AGE ENCLOSURES IN SERBIAN BANAT, SOUTHERN CARPATHIAN BASIN: CONNECTING THE DOTS**

Abstract author(s): Estanqueiro, Marta (University College Dublin; CEACCP- University of Coimbra)

Abstract format: Oral

In recent years several Late Bronze Age settlements have been discovered in the Serbian Banat region, southern Carpathian Basin. These are spread along the eastern region of the Tisza River and vary in size and shape, with some achieving considerable areas.

Sharing general characteristics such as the presence of ditches, clusters of subcircular pale soil marks (visible in aerial photographs or satellite imagery), and the common use of Belegiš pottery, they were designated Tisza Site Group (TSG) (Molloy et al., 2020).

By combining published databases with data from regional bibliography, historical maps and results of satellite imagery analyses, a more comprehensive database was built, seeking to unite historical data with more modern methodologies, gathering as much information possible for future research and comparative studies regarding LBA communities.

This presentation will focus on the construction of the database, from the choice of fields to be included, to the methods used, and how the results obtained were applied in several analyses, during my doctoral thesis, regarding settlement dynamics during the LBA. Future use by other researchers will also be addressed.

5 REGISTERING HILLFORTS IN THE CZECH REPUBLIC: A SIMPLE TOPIC WITH COMPLEX ISSUES TO SOLVE

Abstract author(s): Novak, David (Institute of Archaeology of the CAS, Prague)

Abstract format: Oral

Czech archaeology has a number of published inventories of hillforts and related sites. Although these are undoubtedly important works, they are collections of inconsistently structured information whose value for recording and research is limited. Even relatively new inventory works suffer from shortcomings, in particular incompleteness, problematic geographical delimitation of sites, confusions or issues on the theoretical level.

A few years ago, a comprehensive register began to be created within the framework of the Archaeological Map of the Czech Republic, which aims to offer an authoritative database of Czech prehistoric enclosures. There were included all archaeological sites that were at any point in the past (whether true or false) considered to be the remains of any type of prehistoric or early medieval hillfort or similar type of enclosure. This evidence thus includes a variety of site types ranging from Neolithic rondels, through Eneolithic ditch enclosures, Bronze Age and Iron Age hillforts or fortified upland settlements, to early medieval enclosures. It also includes objects that are mistakenly identified with hillforts (remains of field systems, vanished roads or mining traces, etc.), but which still appear in the literature and their existence has not been disputed.

All enclosures have been located with the greatest possible precision, delineated in GIS as polygons based on available data, incl. LiDAR, geophysics or aerial images, described in terms of recorded activity area types for specific archaeological periods and linked with references to sources. The database also includes information on the likelihood of the accuracy of the interpretation as a prehistoric enclosure and the state of preservation of above-ground relics. Each enclosure is given a unique identifier and the dataset is openly published in the AMCR Digital Archive (<https://digiar-chiv.aiscr.cz/>). The paper summarizes our approach, gives an overview of the contained data and points out theoretical and methodological pitfalls.

6 DATABASES ON PREHISTORIC AND MEDIEVAL FORTIFICATIONS OF ESTONIA

Abstract author(s): Valk, Heiki (University of Tartu)

Abstract format: Oral

Data on prehistoric and medieval fortifications of Estonia are presently stored in three different databases.

1. National Register of Monuments (National Heritage Board) – contains information on state protected sites: location, owner, legislative acts, monitoring, photos, digitized documentation.
2. Archaeological sites and place lore information system (ASPIS; Tartu University) – includes general archaeological information on all, also non-protected sites, both prehistoric hill forts (ca. 140) and medieval castles (ca. 40), and is presently linked to the National Register of Monuments. Its strengths are:
 - a) the map application which can present information based on selected criteria both on modern and historical maps, and
 - b) access to folkloric data (original texts in folklore archives).
3. Database of prehistoric hill forts (Tartu University) – contains detailed archaeological information on the sites (external features, fortifications, research history, bibliography, results, radiocarbon dates etc.).

In addition, data on excavation reports can be found in the databases of archaeological archives of Tallinn and Tartu universities and the National Heritage Board.

Trusting in co-operation with the National Register of Monuments has turned out to be a failure for ASPIS, because the status of sub-database within a poorly working bigger system does not enable any developments. The future task is to separate ASPIS from the register and to re-write it on an up-to-date and sustainable basis which would make it possible to communicate with other databases

7 KFD (KIEL FORTIFICATION DATABASE)

Abstract author(s): Nakoinz, Oliver (Johanna-Mestorf Academy)

Abstract format: Oral

In collaboration with external colleagues, The excellence cluster ROOTS (https://www.cluster-roots.uni-kiel.de/en?-set_language=en) works on a fortification database with a European scope. The database was started with the sites of the metal ages in South Scandinavia and North Germany and will be expanded in three directions: time, space information depth. This paper will describe the structure of the database and the reasons for choosing this particular solution.

The planning of the database takes into account the following requirements:

- simplicity
- low-maintenance
- openness.

The database needs to be rather simple in order to enable people to use the database. This requirement has to be balanced with the wish to include as much information as possible. The database is intended to survive the current excellence cluster and hence to work with low resources in an interoperable format. Low maintenance is mandatory for the project. Finally, the database is intended to fit reproducible workflows. This requires a certain openness and some specific technical features that must be identified.

The experience with several other archaeological databases led to the decision to shape this one differently from many others ones. First, we dispense with traditional database management systems in order to reduce the workload for maintenance and simplify long-term availability. This led to a git-based approach. Second, we concentrate on the denormalization of the database in order to increase the usability and reusability -in a FAIR approach- of the system. A system of a few very simple tables in combination with specific text-based data types allows a powerful application that requires minimal resources and is expandable.

609 MULTIDISCIPLINARY APPROACHES TO METALS: FROM ORE MINING AND METAL PRODUCTION TO THEIR IMPACTS IN HUMAN LIFE AND ENVIRONMENT

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Silva-Sánchez, Noemí - Armada, Xose-Lois (Institute of Heritage Sciences - Incipit, CSIC) - Meunier, Emmanuelle (CRBC, Université de Bretagne Occidentale; CReAAH, Université de Rennes) - López-Costas, Olalla (Ecopast, Cretus, Universidade de Santiago de Compostela) - Mighall, Tim (School of Geosciences, University of Aberdeen)

Session format: Regular session

The investigation of metals, from ore extraction to object production, has always been multidisciplinary. Understanding ore extraction requires knowledge of mining archaeology and geology; metallurgy utilises evidence from material sciences and chemistry, including isotopic analysis to provenance metal sources and to reconstruct technological processes; palaeoenvironmental approaches, through palaeopollution reconstruction, provide diachronic information on past mining and metallurgy and their impact on the landscape, and metal studies on human and animal remains provide a direct link with sociological aspects of metal use, medical treatments or cosmetics. The combination of these approaches enables a better understanding of the metal operational chain and the reconstruction of the human behaviours behind them. It also contributes to answering questions about the social interactions around metal production and exchange, regarding the weight of metal production in ancient economies, and in relation to the environmental and socio-economic imprints on territory, as well of their impact in human lives. Each specialist brings part of the story and articulating them all together can be challenging.

This regular session attempts to build a bridge among all the approaches frequently used for the study of metals. There are no geographical or chronological limits to the contributions although we welcome multidisciplinary approaches that encourage a wider view of the full metal operational chain and a reflection on the strengths and weaknesses of multidisciplinary approaches applied to the study of metals.

The type of questions we want to address in this session are for example: How the aforementioned approaches can be combined to gain a better understanding of the extraction and use of ancient metals? Do palaeoenvironmental and archaeological data share a common narrative? To what extent the information generated for geological surveys is useful for the study of ancient metals? What was the impact of metals on human health and in archaeological soils?

ABSTRACTS

1 MINING AND ORE-PROCESSING BONE TOOLS: KARTAMYSH VS. GREAT ORME

Abstract author(s): Zagorodnia, Olga (The British Museum)

Abstract format: Oral

We present the preliminary results of a comparative analysis of bone tools of Kartamysh (Eastern Ukraine) and the Great Orme (North Wales, UK) copper mines of the Bronze Age.

The Kartamysh archaeological area was exploited during the Late Bronze Age (XVI-XIII BC) according to Eastern European chronology. The peak of active exploitation of the Great Orme copper mines falls within the same period.

The research methodology included, firstly, a visual study of tools in order to reconstruct the technology of their manufacture, and secondly, the observation and microphotography of manufacturing and use-wear traces using mi-

crossscopes. Experiments were carried out to verify the functions of archaeological bone tools using similar replicas in a variety of operations.

The categories of tools considered here were those used for mining and ore-processing.

This research study resulted in the identification of a new, previously undiscovered functional type of bone tool. They are made from ribs, scapulae, and tubular bones. Their use was for stirring and sweeping ore pieces in gravitational processing. Before now, it had been assumed that these tools had been used for leather-processing and ore extraction only.

We also identified a type of peculiar wedge made from tubular bones, and also scoops made from animal scapulae and pelvic bones thought to be used for raking ore.

Similar tools have also been found in the other Bronze Age mining areas in Europe – Kargaly (the Urals, Russia) and Schwaz/Brixlegg (North Tyrol, Austria).

The database on deformation and use-wear traces is now suitable for comparing the tools in general, and their individual parameters with similar ones of other mining complexes in prehistoric Eurasia specifically. The bone industry of Bronze Age miners is distinguished by a special selection of bone blanks. The differences are clear at the level of the totality of different types of tools.

2 IRON PRODUCTION IN BRITTANY (FRANCE): IN SEARCH OF A FORGOTTEN INDUSTRY

Abstract author(s): Le Carlier de Veslud, Cécile (UMR CReAAH / CNRS) - Gandini, Cristina (Centre de Recherche Bretonne et Celtique) - Clouin, Etienne (Université Rennes 2 / CReAAH) - Menier, Emmanuelle (Centre de Recherche Bretonne et Celtique)

Abstract format: Oral

The Armorican Massif is a region particularly rich in iron ores, that have been exploited at least from the 6th century BC, and until the 20th century. This iron production, especially in the pre-industrial stages, is still poorly known and under-estimated. A wide synthesis of existing data, together with new researches on significant areas in Brittany, has been initiated in 2021. The records are integrated in an online collaborative database. This survey allows to investigate different aspects of ancient iron production in this region, thanks to an approach coupling geology, archaeology and archaeometry.

The mapping of metallurgical sites indicates which territories produced iron and points out the major ones, covering different periods. The chemical characterisation of slags and ores aims to provide data about the circulation of iron. Absolute dating, still rare, allows to investigate the evolution of the technical processes and the continuity or ruptures of the production in the main sectors.

The long-term objective is to reconstitute the history of the ironmaking production in Brittany, from the beginning of the Iron Age to the end of the Middle Ages, and to take the results into account when discussing the component of regional economies at these periods.

3 LINKING METAL PRODUCTION AND ENVIRONMENTAL ARCHIVES IN THE ATLANTIC LATE BRONZE AGE

Abstract author(s): Armada, Xose-Lois (Institute of Heritage Sciences - Incipit, Spanish National Research Council - CSIC) - Silva-Sánchez, Noemí - Faro, María G. (Institute of Heritage Sciences - Incipit, CSIC) - Montero-Ruiz, Ignacio (Institute of History, INCIPIT, CSIC)

Abstract format: Oral

The production and circulation of metals have traditionally been an essential element in the analysis of the social processes of recent Prehistory. In recent years, notable advances have been made in fields such as mining archaeology, isotopic geochemistry or the inventory and archaeometric characterization of metal artifacts and other material evidence linked to their production. These approaches contribute to clarify the chronology and scale of metallurgical production and reconstruct metal circulation networks, obtaining a more refined perspective on the role of metallurgy in prehistoric communities.

In this contribution we explore the possibilities of combining these approaches with other proxies that are less common in such integrated perspectives: the hoarding of metals and the palaeopollution linked to mining-metallurgical activities.

The hoarding of metals was a widespread phenomenon in later prehistoric Europe and particularly intense in the Atlantic façade of the continent. The nature and scale of this phenomenon varies depending on chronology and geographic area, but the suitability of hoards for periodisation and quantification offers an opportunity to link the cycles of metal hoarding to the palaeoenvironmental records of atmospheric pollution caused by mining and metallurgical activities. While palaeopollution studies using peats and other environmental archives are making a substantial contribution to

our understanding of the chronology and intensity of ancient mining and metallurgical activities, their connection to the hoarding cycles has never before been explored. In line with a similar study carried out recently for the Roman period (Silva-Sánchez and Armada 2023), this paper offers a critical review of research on prehistoric metal pollution in the Atlantic European Prehistory, exploring to what extent it is possible to combine and refine this information with that offered by mining archaeology, isotopic characterization of mineralizations and the study of metal hoards.

4 TOWARDS THE SOURCES OF TIN AND COPPER OF THE CENTRAL ASIAN BRONZE AGE: NEW EVIDENCE FROM ISOTOPIC AND CHEMICAL ANALYSES

Abstract author(s): Berger, Daniel (Curt-Engelhorn-Zentrum Archäometrie Mannheim) - Kaniuth, Kai (Ludwig-Maximilians-Universität München) - Boroffka, Nikolaus (Deutsches Archäologisches Institut Berlin) - Kraus, Steffen - Wittke, Andreas - Pernicka, Ernst (Curt-Engelhorn-Zentrum Archäometrie Mannheim)

Abstract format: Oral

Comparatively little is known about the copper and tin sources in Central Asia that were exploited by the Andronovo culture and the Oxus civilisation during the Bronze Age to make bronze. To shed light on this aspect, almost 100 bronze artefacts from the Middle Bronze Age to the Early Iron Age were examined through a combined analysis of the chemical and isotopic composition. Trace element patterns and the isotopic compositions of lead, tin and copper were determined from the objects supplemented by tin isotope analysis of Central Asian tin ores. The data shows that the Andronovo and Oxus populations used different mineral resources in the early stages of the Bronze Age, when the Oxus civilisation obtained copper from polymetallic (tin-bearing) deposits in Iran (Deh Hosein, Nakhlak/Bagh Gorogh) and possibly Afghanistan, while the Andronovo culture mainly used copper from the southern and middle Tian Shan Mountains. With the transition to the Late Bronze Age II, a change in the material basis can be recognised, in which the Oxus people increasingly accessed metal deposits in the Andronovo territory. The most important finding in this respect is the evidence of copper and tin from the polymetallic copper-tin deposit at Musiſton. The Musiſton mines supplied both cultures with a “natural” bronze, which accounted for about a third of all objects studied. The artefact data indicates a decline in the exploitation of the Musiſton mines in the course of the Early Iron Age, while other copper and tin sources in the Tian Shan and probably the Hindukush (tin) came into use. This testifies to the intensive use of the rich mineral resources of Central Asia and beyond, as well as to intensifying cultural and trade contacts between Andronovo and the Oxus civilisation. The talk presents the result of the interdisciplinary case study.

5 THE IBERIAN TIN PROJECT: A PLURIDISCIPLINARY APPROACH TO ANCIENT TIN PRODUCTION IN WESTERN IBERIA

Abstract author(s): Meunier, Emmanuelle (CRBC, Université de Bretagne Occidentale) - Fonte, João (Department of Archaeology and History, University of Exeter; CHAM, School of Social Sciences and Humanities, NOVA University of Lisbon) - Rodrigues, Alexandra (VICARTE, School of Sciences and Technology, NOVA University of Lisbon) - Dias, Filipa- Lima, Alexandre (Department of Geosciences, Environment and Spatial Planning, Faculty of Sciences, University of Porto) - Silva, Rui (CENIMAT/i3N, School of Sciences and Technology, NOVA University of Lisbon) - Comendador Rey, Beatriz (GAAAT, Universidade de Vigo) - Figueiredo, Elin (CENIMAT/i3N, School of Sciences and Technology, NOVA University of Lisbon)

Abstract format: Oral

The question of ancient tin production is an old topic, but has recently gained a new impetus by being addressed by several research projects in Europe. The Iberian Tin project (PTDC/HAR-ARQ/32290/2017; PI: Elin Figueiredo) developed a multidisciplinary approach joining archaeological, geological and metallurgical domains aiming to contribute to a comprehensive vision of tin mining and tin-bronze production from Bronze Age to Roman period in Western Iberia. A combination of archaeological and geological surveys, a review of historical documentation, LiDAR and aerial imagery processing, analyses of metals and slags, and excavations were performed.

In the present talk a point of situation will be made based on the knowledge of ancient tin exploitation in Western Iberia before and after the Project, aided by the presentation of some case-studies developed in the last years. Emphasis will be made on the different inputs that each discipline was able to provide to the study, such as the kind of geological resources used for cassiterite exploration, the mining impacts in the landscape, ore smelting and metallurgical technologies to produce tin or bronze, and the (frequently overlapping) chronologies of these activities in some places.

6 DIVINE METAL? SACRAL ASPECTS OF LATE BRONZE AND EARLY IRON AGE SWORDS IN SOUTHERN COAST OF BALTIC SEA

Abstract author(s): Wojtecki, Jakub (Nicolaus Copernicus University in Toruń)

Abstract format: Oral

Bronze metallurgy and bronze artifacts themselves held huge significance in religious life of their users. That includes also weaponry, especially new invention of bronze age - swords. Their presence in hoards on one hand, and finds of swords in rivers, lakes, swamps and peatbogs on other hand suggests that they were important element of religion and rituals.

Assuming, that worldview of southern coast of Baltic sea region connected with Lusatian culture was dominated with religion and mythology we see, that every aspect of human life, including perception of artifacts, was highly sacral. Metallurgy required not only professional skills but also contact with supernatural powers. Process of turning ore, gathered from beneath the ground, transformed to liquid by fire, into hard and shiny item bore the hallmarks of divinity.

Metallurgy, just like other prehistoric crafts held many taboos and rules. Breaking them would make produced item useless and bring wrath of the gods. That's why every aspect of analyzed artifacts such as ornaments, decorative elements, shape and place of deposition is important for their makers and users, and every one of them holds symbolical significance. To understand meaning of metal items in late bronze and early iron age we should focus not only on their utilitarian meaning, but also on their hidden meaning.

To reconstruct some religious aspects of metallurgy and manufacturing of weapons, we need to analyse known indo-european mythological systems and compare them with archaeological sources and their attributes and place of deposition. Together they can build an image of sacral meaning of bronze.

7 THE QUEST FOR METAL SOURCES OF THE NORDIC BRONZE AGE AND THE ORIGINS OF THE EARLIEST BLADES: A MULTI-PROXY APPROACH

Abstract author(s): Cornelis, Bart - Wittke, Andreas - Berger, Daniel (Curt-Engelhorn-Zentrum Archäometrie)

Abstract format: Oral

The early Nordic Bronze Age (NBA period IB; 1600 – 1500 BC) is considered as the breakthrough of bronze metallurgy, which is demonstrated by an increased metal consumption and the appearance of refined bronze artefacts in regional styles. Examples of these artefacts are the blades of the Sögel, Wohlde, Baven and Harburg type, which belong to an independent cultural group in northern Germany and southern Scandinavia during the NBA IB. These blades appear without local precursors, and are often regarded as imports from Central and southeast Europe, but sometimes also as indigenous inventions. However, archaeometric analyses to support such claims are still lacking.

In this talk, we present the first results of an interdisciplinary project that aims to determine the chemical composition and lead isotope ratios as well as for the first time, the tin and copper isotope values of ca. 300 objects of this well-defined group of artefacts. The intention is to examine whether the chemical and isotopic signatures can distinguish between a typology of form and a typology of materials. Moreover, by applying statistical methods and mathematical models, the multi-proxy data should be checked for possible correlations and other systematics. In so doing, metal groups and mixtures of copper types or bronze batches will be identified, which helps to understand the origin of raw materials, relationships between blades and identify potential imports or production centres. Early results of the chemical and lead isotope analyses indicate that the majority of the blades consists of low-impurity copper of chalcopyrite quality that correspond to the Alpine Mitterberg, but there are equally objects that were produced from Slovakian copper ores or mixtures of different ore types. These results provide important insights into trade networks and the provisioning of raw materials, and will be assessed statistically in the future along with further data.

8 TRACING THE EMERGENCE AND EVOLUTION OF IRON TECHNOLOGY IN THE NETHERLANDS DURING THE IRON AGE AND ROMAN PERIOD

Abstract author(s): Valk, Meike (University of Leiden)

Abstract format: Oral

In the present study, the author undertook an investigation into the initial use and production of iron in the Netherlands, with a particular focus on the Iron Age and Roman period. While extensive iron production was observed in the Middle Ages, there remains a dearth of knowledge about earlier iron production in the region. Although evidence of iron use can be traced back to the Middle Bronze Age, there is a lack of conclusive evidence for iron production during the Iron Age, in contrast to other regions in Europe. Scholars have proposed that iron was imported during this period, with smelting only beginning in the Roman period, but little is known about this era too. Given these gaps in the current understanding of iron use and production, this study centered on the use of iron and bronze during the

Iron Age and aimed to trace the development of iron use over time. The study then examined iron production during both the Iron Age and the Roman period, exploring the extant evidence.

The findings of this investigation indicate that, during the Iron Age, while bronze was primarily employed for ornamental purposes, iron was subject to greater experimentation. Regarding iron production, the study revealed that the locations of iron production artifacts and features showed clear alignment with the presence of resources. Ultimately, this study was able to offer a broad reconstruction of the development of iron use and production in the Netherlands during the Iron Age and Roman period.

9 LEARNING FROM ARCHAEOLOGY? THE EUROPEAN GREEN DEAL AND COPPER

Abstract author(s): Civilyte, Agne (Lithuanian institute of History)

Abstract format: Oral

My presentation will undertake a brief review of the methods used in the Material, Natural, Engineering Sciences, and Archaeology to reconstruct the development of technologies and environmental practices, with a focus on ancient metal alloys. The expansion of ancient human industrial activity (including mining, smelting, and synthetic compound creation) has caused an exponential increase in the amounts of heavy metals released into the atmosphere, water, and soil.

This presentation shall follow the idea, that we need to reflect on the many harmful substances people used during the mass production of bronze, what kind of vapors or fumes they inhaled, and how dangerous it was for their health.

I will discuss the toxicity of metals in the Copper and Bronze Age, while also mentioning the effects of other harmful substances on the human body. In this context, I aim to show that new archaeological discoveries allow us to understand more precisely the conditions in which people of the past lived, and to challenge us to understand the solutions they used to cope with these problems.

Last but not least, the identification of ancient technologies can inform modern engineering about how to reduce the quantity of toxic metals in modern mining and metal production.

10 POLLUTEDPAST AND ROMANS

Abstract author(s): López-Costas, Olalla (Area of Archaeology. EcoPast- Universidade de Santiago de Compostela)

Abstract format: Oral

Environmental metal pollution is a threat to human health. Roman times are considered one of the most polluted periods in South Europe preindustrial history. People suffered from this contamination in a way that is difficult to assess today, as well as the legacy that it has left. Many archaeological human remains from the time are notable for their elevated lead levels. It has been said that much of the metal pollution was due to intensive mining and metallurgy. However, other researchers suggest that urban areas, highly dependent on the use of metals, were the most polluted (i.e., due to lead pipes). Much has been written about the heavily lead-contaminated Roman world, but the scientific literature is full of clichés. Reviewing and reflecting on the continuity or disruption with the Iron Age pollution is the objective of this work, as well as the scope of this contamination and its relationship with the power of elites through the exploitation of resources and its cost in health of average people. The target area will be the Iberian Peninsula, which is considered an area with intense mining and metallurgy, and great urbanization at the end of the imperial period. The target people will be skeletons belonging to average people, including children and women. These considerations are part of the start of the PollutedPast (ERC) project, which will try to reveal the impact of metal contamination in Europe in the Roman and medieval periods.

11 A EUROPEAN PERSPECTIVE ON ROMAN METAL POLLUTION AND THEIR LINKS TO THE ARCHAEOLOGICAL EVIDENCE

Abstract author(s): Silva-Sánchez, Noemí - Armada, Xose-Lois (INCIPIT-CSIC)

Abstract format: Oral

One of the major changes related to the expansion of Roman rule across Europe was related to the intensification of the exploitation and use of metals. The scale of this phenomenon was so big that the pollution signal has been recognised to occur even at a hemispherical level. However, establishing the local narratives behind this broad phenomenon is still problematic due to the inherent limitations of mining archaeology and palaeoenvironmental approaches. This paper offers a systematic review of metal palaeopollution records from ice, lake sediment and peat cores located in Europe and Greenland. Of the 89 cores reviewed within this work, 81 showed a discernible characteristic lead peak in Roman times. Of those, 44 were interpreted to reflect a macro-regional (hemispherical) pollution signal, another 22 as resulting from a local pollution source, and 6 showed contrasting evidence pointing towards both regional and local sources. Some of the local signals were identified by a lead isotope match with local ores, but in more uncertain cases the interplay between palaeoenvironmental and archaeological work was essential in order to attribute a local origin to

the detected pollution trend. From this review, we conclude that the principal limitations in mining archaeology (establishing a chronology) and palaeopollution reconstructions (determining a source) can be overcome by considering in conjunction with the information provided by both approaches.

12 PROVENANCE STUDY ON COINS MINTED AT VELIA (ITALY): PB ISOTOPE AND ARCHAOMETALLURGY

Abstract author(s): Ercoles, Isabella (Università degli Studi di Roma LA SAPIENZA; CHNet - Cultural Heritage Network, LNGS-INFN) - Nisi, Stefano - Marchegiani, Francesca (CHNet - Cultural Heritage Network, LNGS-INFN) - Carbone, Federico (Università degli Studi di Salerno, DISPAC) - Trincherini, Pier Renato (LIMS, LNGS-INFN)

Abstract format: Oral

Lead concentration and isotopes of 20 Athena/Tripod bronze coins from Velia, a Greek colony in Italy, have been analyzed by ICP-MS and TIMS at the Laboratori Nazionali del Gran Sasso (INFN).

The coins, dated to the 1st century BC, are part of a broader project promoted by the University of Salerno that won the 2019 Art Bonus Competition.

Determining Lead isotopic ratio of these coin samples (to assign/identify a reliable metal provenance) and investigating the geochemistry of the mining districts, to understand the role played by low-value coins at Velia are the main targets of this research. Lead concentrations range from fractions to tens of percentages. Lead and other trace elements data suggest that the raw materials used for the coins came from different mines. Lead isotopic ratios span from 0.836 to 0.837 and from 2.076 to 2.082 for $^{207}\text{Pb}/^{206}\text{Pb}$ and $^{208}\text{Pb}/^{206}\text{Pb}$, respectively. The lead isotope results were compared with lead isotope data published of ore deposits from Mediterranean areas (Spain, Italy, Greece, and Cyprus) to fingerprint the sources of the Velia bronze coins. Almost half of the coins fall into the clusters of Spain and Tuscany, whereas only a few samples are compatible with Sifnos in Greece (four coins) and Bosa Area in Sardinia and/or Troulli mine in Cyprus (two coins).

At last, six coins cannot be associated with any known source; this suggests the possibility of extensive metal recycling. Regarding the Spanish provenance, Velia coins overlap the cluster of South-East Spain, corresponding to the Cartagena-Mazarron mine. This information, integrated with archaeological and historical ones, helps to reconstruct the trade routes and socio-economic relationship of the city of Velia.

13 SUPER TOTA ARTE RAMIS. A MULTIDISCIPLINARY APPROACH TO THE STUDY OF ANCIENT MINING LANDSCAPES IN THE COLLINE METALLIFERE (TUSCANY, ITALY)

Abstract author(s): Dallai, Luisa - Volpi, Vanessa (University of Siena)

Abstract format: Oral

The Colline Metallifere mining district (Southern Tuscany) has been a privileged study area of Italian mining archaeology for many years. The presence of important polymetallic deposits has strongly oriented the economic, political and social development of the territory, connecting it to wide commercial circuits. During the Middle Ages, these mining resources became a strategic asset controlled by public power, aristocracies, and finally by the municipal authority (Benvenuti et al. 2014). Between 2015 and 2020, thanks to the ERC Advanced nEU-Med project, coordinated by the University of Siena (<https://www.neu-med.unisi.it>), a multidisciplinary approach to the study of the ancient productive landscape has been greatly boosted, through an effective dialogue between environmental sciences (environmental chemistry and geochemistry), archaeology (mining archaeology, archaeometallurgy, landscape archaeology, remote-sensing techniques), and the study of important mining archives. This multidisciplinary approach resulted in a multiscale operational protocol applied in different contexts of analysis, at site and territorial scale, which obtained a significant increase in useful data for the reconstruction of the historical production landscape and its interaction with the present environment (Dallai, Donati, Volpi 2018).

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14 SILVER MINING IN THE MIDDLE AGES: TRANSFER OF TECHNOLOGIES, IDEAS AND ORGANIZING STANDARDS ACROSS EUROPE

Abstract author(s): Minvielle Larousse, Nicolas (Ecole française de Rome; Aix-Marseille Université, LA3M, UMR 7298) - Hrubý, Petr (Masaryk University)

Abstract format: Oral

At the turn of the 1300s, European silver production began a long decline. Local crises followed and regional declines were announced after a century of peak production during which the deposits of most European mountains were exploited, their surroundings colonised, techniques proved and regulations stabilised. The gradual depletion of the deposits that had made some areas rich led technicians to innovate in order to process poorer or more scattered ores, and administrators to change their methods of regulating production. From one region to another, solutions were experimented with and sometimes exported with the movement of workers, technicians, investors or the expansion of power. Europe was a vast laboratory.

This paper takes an interdisciplinary and comparative approach between history and archaeology, focusing specifically on two major silver-producing regions in the Central Middle Ages: Iglesias in Sardinia and Jihlava in Bohemia. The objective is to demonstrate how silver companies were structured during times of resource abundance and how they responded to the gradual depletion of deposits. The study will first examine the norms and practices related to mining concessions, including their conception, establishment, and maintenance. It will then explore the choices made in the organization of the production process, including mines, mineralurgical and metallurgical workshops. Finally, it will analyze how these aspects were linked to land occupation, including temporary housing near workshops and urban centers founded by settlement policies.

15 MEDIEVAL SILVER PRODUCTION AND ITS IMPACT ON THE ENVIRONMENT AND SOCIAL STRUCTURES: MULTIDISCIPLINARY APPROACHES

Abstract author(s): Hrubý, Petr - Milo, Peter - Tencer, Tomáš - Vágner, Michal (Masaryk University of Brno)

Abstract format: Oral

Authors: Petr Hrubý, Peter Milo, Karel Malý, Petr Kočár, Libor Petr, Tomáš Tencer and Michal Vágner

The communication will highlight two the most archaeologically visible impacts of medieval production of silver – the essential coinage metal and blood in the veins of economies in the “Old World”. The first was the environmental impact, which was followed by drastic deforestation and contamination of soils with heavy metals. The second was the establishment of settlements of miners and metallurgists by the mines. These settlements, in all respects different from villages or towns, were short-term and temporary, but at the time of the first historically documented boom of silver production in the Kingdom of Bohemia in the 13th century, they represented a not inconsiderable part of cultural landscapes. The topic will be presented on several archaeological examples from the Central Bohemian Highlands (CZ), where multidisciplinary research, containing archaeological excavations followed by large-scale magnetic survey and geochemical as well as archaeobotanical approaches, has been advanced over the last 20 years.

16 MULTIDISCIPLINARY APPROACHE ON A MEDIEVAL ORE MILL: ENERGY MIX AND DIGITAL TWIN

Abstract author(s): Maqueda, Florence (Sorbonne University, UMI 209 UMMISCO; Laboratoire Archéomatériaux et Prévision de l'Altération LAPA - IRAMAT UMR7065, NIMBE UMR3685, CNRS, Université Paris-Saclay) - Florsch, Nicolas (Sorbonne University, UMI 209 UMMISCO; Sorbonne University, UMR 7619 METIS) - Téreygeol, Florian (Laboratoire Archéomatériaux et Prévision de l'Altération LAPA - IRAMAT UMR7065, NIMBE UMR3685, CNRS, Université Paris-Saclay)

Abstract format: Oral

The comminution of ores is an important step in the metal operational chain. The ore mill is used to homogenise the granulometry of the ore. There is an intuitive understanding of how a mill works. However, there is little quantitative data on its performance. Yet, those data provide valuable insight into the technical, social and economic decisions of a mining company.

As described by Agricola in the *De re Metallica* (1556), there are several sources of energy to move an ore mill: human, animal or hydraulic. Within the hydraulic systems themselves, there are a number of different types of wheels: horizontal, overshot and undershot. Each of the only three ore mills excavated in Europe for the Middle Ages had a different type of hydraulic wheel. This suggests that the choice of a type of actuator is not only related to its performance but it has to do with the local energy mix, the environment and social choices.

Using data of one of the three examples in Europe (Castel-Minier, second half of 14th c.), we have been studying energy flows in ore mill through a multidisciplinary approaches. It allowed us to have quantitative data about the system's performance depending on environmental parameters. During this study, we used a combination of physical models,

experimental archaeology and analysis of textual and archaeological sources. A digital twin of the ore mill was created from those data. It is only through the multiplicity of these approaches that we have been able to integrate energy flows into the understanding of a medieval operational chain.

610 NEW WAYS OF TELLING THE HISTORIES. NEW METHODS OF DISSEMINATION OF ARCHAEOLOGY AND HERITAGE

Session theme: 3. Heritage Narratives and Representations

Session organisers: Loy, Aida (Independent Researcher) - Martínez Espinosa, Isaac (Universidad de La Rioja; Instituto de Estudios Riojanos) - Larrauri Redondo, Sergio (Instituto de Estudios Riojanos)

Session format: Regular session

Sharing the different tasks carried out by archaeologists and cultural heritage professionals is one of the most important parts of those works. If something is not shared, it is as good as if it had not been discovered. In light of these ideas that we would like to organize this session, inviting professionals from any field to share their experiences on sharing with stakeholders in non-traditional methods. For us, we think of traditional methods of sharing with stakeholders where the only communication came from the professional rather than keeping an open dialogue among the different groups.

We would like to share and explore different non-traditional methods that have flourished in these past years. From video games, 3D models or social media profiles to less digital ones such as dialogues with stakeholder groups, volunteer days or festivals around the heritage. We think that it is through the use of these new “non-traditional” methods of sharing the heritage that we can bring stakeholders to be involved in the heritage, creating a more protective and informed community around it. Again we would like to invite professionals from any field that is interested in sharing the heritage and the archaeological work in new ways to share their work with us and create a space where new ideas can start.

ABSTRACTS

1 'DO YOU GET PAID FOR EVERYTHING YOU FIND?' - NAVIGATING ARCHAEOLOGY AND SOCIAL MEDIA IN ESTONIA

Abstract author(s): Reppo, Monika (University of Tartu; Estonian Association of Archaeologists)

Abstract format: Oral

What started out as a way of offering COVID-safe tours of archaeological sites to an island community in Estonia during the European Archaeology Days in 2020 via YouTube, grew into an experiment on different social media platforms. With only 1.1 million Estonian speakers, learning about archaeology and heritage through social media in one's native language can be a challenge; even more so from an actual archaeologist or heritage specialist. This paper reflects on my personal experience as a PhD candidate and full-time archaeologist in using social media platforms (YouTube, Twitter, Instagram and TikTok) to share research results and engage with larger and smaller communities to build interest in local history. Am I able to produce informative and captivating content that does not rely solely on sensationalism? What makes or breaks a post's engagement when the goal is to involve the community in a dialogue about the past and heritage? Less digital forms of direct communication, media interest, job shadowing, reactions of the local and scientific community – this paper will address the challenges and outcomes of sharing archaeology on social media in Estonian.

2 TELLING THE TALES: LOOTED PODCAST

Abstract author(s): Kontes, Zoe (Kenyon College)

Abstract format: Oral

Looted, a narrative podcast series, provides context for objects that have been removed from the ground without proper excavation. Each episode uses the story of a specific artifact or group of artifacts from the ancient Mediterranean world to explore a larger topic, such as the looting of archaeological sites; forgeries and the science behind determining the authenticity of classical artifacts; and repatriation of looted objects. Looted also includes interviews with archaeologists and museum curators. The aim of the podcast is to help curtail the plundering of antiquities by contributing to education on these issues. It is a widely accessible means of disseminating scholarly research-based information about antiquities trafficking to an increasingly audiophile public. A story about a gold wreath smuggled internationally inside a watermelon draws listeners in with a formula like that of “true crime”, encouraging them to think more about cultural property, and who “owns” the past. In the continuing battle for the preservation and protection of

the world's cultural heritage, public opinion can make a difference. Informing public opinion can, as history has shown, translate ethical thinking into policy and legislation.

3 MASTERS OF THE ASTURIAN HÓRREO

Abstract author(s): Rodríguez, Fernando (Asociación del Hórreo Asturiano)

Abstract format: Oral

This project was developed with funding from the Ministry of Culture of Spain.

In this communication we will learn about the asturian hórreos, the traditional construction techniques, the work of the artisans who keep the tradition of their restoration and how we developed the project recording the documentary *Maestros del Hórreo Asturiano*.

The dissemination of these techniques and the recognition of this trade, as well as that of the granaries themselves as a traditional structure and as a symbol of a way of life, such as that of the Asturian rural world, is a duty that has not always been fulfilled as it is due, for which we consider the work we have done very necessary, taking a look for the first time at the immaterial wisdom that surrounds these elevated wooden structures that are part of our roots and that have much to contribute to the present of the region.

During the making of the recordings, we delve into the workshops of these wood craftsmen, documenting the traditional techniques and building a part of the Asturian granary with each one of them, from the *pegollos* (supports) to the roof tiles.

Another of the most important things in carrying out this project was also knowing and making visible the traditional trade of the blacksmith. A job that has been passed down for generations and that today reaches the few remaining *horreros*.

Not only did the techniques and the trade itself surprise us, but we also found people of exceptional human quality who resist being the guardians of the construction techniques of the Asturian granaries and *paneras*, and therefore a piece of our history that we do not want to disappear.

4 STEPPING OUTSIDE THE IVORY HALL - LOCAL GUIDES AS RESEARCH DISSEMINATORS

Abstract author(s): Magin, Elisabeth (Kulturhistorisk Museum, UiO)

Abstract format: Oral

Bergen, Norway, can boast a wild and varied history reaching back to the year 1070, when the last Viking king of Norway, Ólafr kyrri, allegedly founded the town. In addition to historical buildings like Håkonshallen (built by Håkon IV Håkonsson between 1247 and 1261), Bergen is also world-famous for the UNESCO world heritage site Bryggen, the single remaining Hanseatic kontor. Bryggen was also the site where one of the largest medieval town excavations took place between 1955 and 1979, yielding hundreds of thousands of finds, now displayed in the Bryggens museum right next to the Church of Saint Mary's.

Håkonshallen, Saint Mary's and Bryggen all make their appearance in written sources from the Middle Ages, most prominently in the Norwegian Kings' sagas, detailing the Civil War kingship struggles ending only with the reign of Håkon IV. Local guides in Bergen are trained up specifically to relay the history of these historical landmarks to the thousands of tourists visiting Bergen each year, and the local tourism industry is one of the major stakeholders in any decisions concerning the cultural heritage sites in the area. However, post-training, further research and reading remains the single guide's responsibility. Especially new guides also struggle with choosing the most relevant and at the same time most interesting aspects of any given site for the groups they guide.

This paper attempts to reflect on roughly 10 years of trying to balance being a guide while also actively conducting research on the Bryggen excavations, and explores the potential of new knowledge exchange networks to facilitate meetings between researchers, university students and local guides and, ultimately, research dissemination.

5 POURBUS TROUBADOUR: LIVING ROOM LECTURES ON LANDSCAPE ARCHAEOLOGY

Abstract author(s): Trachet, Jan (Ghent University)

Abstract format: Oral

The research project *Painting/Mapping the medieval Landscape* used a landscape-archaeological perspective to study the medieval landscape around Bruges as depicted by Pieter Pourbus. The *Map of the Liberty of Bruges* (1561-1571) depicts the urbanised coastal hinterland of Bruges at the end of its late medieval economic heyday. With an unprecedented level of both detail, Pourbus meticulously reproduced the coastal countryside with indication of cities, towns, houses, dikes, roads, waterways, etc. The resulting map is a unique depiction of the late medieval landscape northeast of Bruges before it was radically transformed by the Eighty Years War.

After studying the map from the desktop, I launched for two years in a row ‘Pourbus Troubadour’: a one-week tour combining field observations with science communication. During the day, I cycled over predominantly medieval roads as depicted on the map, and visited already identified archaeological sites. In the evening, I gave living room lectures to local hosts who offered me board and lodging in return. The hosts could invite whoever they wanted: family, friends, neighbors, ... This concept proved to be a very successful way (1) to submerge yourself as a researcher in the map, area and landscape you study; (2) to communicate your research and the regional history to the local communities in which you work; (3) to make use of network/audience you would otherwise have never reached; and (4) to increase the impact of your communication through its small scale and the proximity of your audience. As ‘Pourbus Troubadour’ was awarded internationally and praised for its innovative way of science communication, I will argue that many researchers studying historical maps, landscapes or archaeological sites can and should engage in suchlike projects. Therefore, I will also give an insight in the do’s, don’ts and logistics to organise Living Room Lectures.

6 HOW AUDIO EXPERIENCES MAY ENHANCE VISITOR EXPERIENCE OF HERITAGE SITES

Abstract author(s): Lillak, Anu - Kaldre, Helena (Estonian National Heritage Board; Guidio) - Kurisoo, Tuuli (Tallinn University; Guidio) - Tint, Küllike (Tallinn City Museum; Guidio)

Abstract format: Oral

Archaeological heritage is at risk mostly due to people not recognising either the found archaeology or its value. In May 2022, Heritage Hackathon took place in Viljandi, Estonia. The discussions led to common understanding that archaeology and other heritage sites should be more visible and there should be more information in captivating form – something that would bring people on site, engage and educate the visitors. As the number of archaeologists and historians or their funding does not favour guided tours or placing information boards to every site, it was essential to find a new way to share the information.

In collaboration with archaeologists from different institutions and a history teacher, a form of phygital edutainment was created. We started creating engaging fact-based professionally staged audio experiences enhancing the visit of selected historical sites. The information can be accessed via web application anytime and anywhere. The first experiences are getting feedback and it seems we are on the right track.

In the presentation we are going to share our adventure from hackathon to a functioning service, the feedback and thoughts we have received on the journeys and from interviews with communities closely related to heritage sites.

7 DISSEMINATING THE HERITAGE OF PRE-ROMAN CULTURES IN SCHOOLS: THE SELECT PROJECT

Abstract author(s): Marchesini, Simona - Vizzino, Giacomo (Alteritas)

Abstract format: Oral

In the Erasmus Plus project SELECT – Self-Learning Atlas of Ancient European CulTures (www.selecteplus.it, KA201, 2020-2023), we aimed to bring the history, archaeology and epigraphy of the ancient world, especially the peoples before Rome (in Italy, Spain, France and Eastern Europe), into schools for informal learning about ancient peoples. The reconstruction and identification of a people is always a complex process in which different cultural aspects add up and alternate over time. This is why we thought of creating a multi-structured, interactive Atlas where everyone can build their map according to their curiosity but also according to their educational goals. The Map Generator tool is designed to allow access to navigation by recalling different cultural aspects - marked with different colours and signs - such as archaeological facies, inscriptions, alphabets, languages, mints, and sanctuaries. Teachers and students will be able to use the tool for teaching purposes. Still, the Atlas is designed to allow all citizens informal and entertaining access to knowledge about the ancient world and to question the processes of identifying ancient peoples built from different elements that change over time. The temporal dimension, usually reduced in current historical cartography, will be a crucial element, allowing the user to observe how the history of early Europe changed over the centuries in its features and cultural aspects.

8 NEW AND OLD METHODS OF HERITAGE DISSEMINATION FROM A SMALL REGION

Abstract author(s): Larrauri Redondo, Sergio (Instituto de Estudios Riojanos)

Abstract format: Oral

Archaeology and cultural heritage are undoubtedly a source of knowledge, social, educational, economic, research and tourism development. In this context, the role of archaeologists and cultural heritage professionals not only limited to research but also to the necessary dissemination and social utility of their work.

The arrival of the Internet and the development of Information and Communication Technologies (ICT) are changing our society with the continuous presence of digital technologies in all areas of our lives. Also in our way of accessing

and consuming culture, or of teaching and learning, enabling the creation of a community with greater sensitivity and recognition of its cultural heritage. A window of opportunity for heritage technicians

This proposal presents various initiatives carried out in a small region of Spain (La Rioja), small in size but with important heritage resources, for the dissemination and communication of heritage, where new and traditional methods coexist. For example: the use of different social networks and blogs with general news and content (written and visual) on cultural heritage, or on a specific site or heritage asset; the creation of 3D models; experimental archaeology workshops; guided visits by the technicians themselves during the development of their work; discussion tables; creation of cultural heritage content for children and young people; preparation of digital heritage catalogues for future publication in the network.

A new scenario for dialogue, exchange, scientific knowledge and participation, with other variables such as the possible role of cultural heritage and its new methods of dissemination for rural development.

9 EXPLORE THE HERITAGE OF THE PAST IN INFORMAL ENVIRONMENT. THE XFORMAL PROJECT

Abstract author(s): Michalowski, Andrzej - Sobkowiak-Tabaka, Iwona (Wydział Archeologii Adam Mickiewicz University Poznań) - Marchesini, Simona (Alteritas) - Siri, Anna (University of Genua) - Vizzino, Giacomo - Borghesani, Giuliana (Alteritas)

Abstract format: Oral

In xFORMAL, a MSCA RISE project (Grant Agreement Nr. 101008184, 2021-2025, www.xformal.eu), we have developed a new, informal method, to disseminate the cultural heritage of the past.

The project partner countries (Italy, France, Spain, Portugal, Poland and Finland) have developed real-life experience pathways in the landscape in search of monuments and other objects from the past, most of them contained in museums and archaeological parks. The routes are presented in the form of a game driven by a platform available on the mobile phone or tablet, thanks to which the player moves through the landscape, sees ancient cartography, explores museums and carries out tasks on single archaeological objects. The chronological frame covers the pre-Roman age, involving ancient populations that are usually neglected in the school curricula. The aid material for the game (help) consists of information about the ancient world and specific topics (writing, dead cult, religion) with emphasis on monuments with inscriptions (when available), where one can play with deciphering alphabets, reading some texts, identifying the function of an object or its original location. The framework of this real computer-supported experience is a narrative with a telling character, constructed in such a way that the user/player learns information about ancient culture, the value of artefacts, in a playful and progressive way, almost without realising that they are learning. The methodological background of this project is based on the knowledge that among the various forms of learning, the informal one, not conveyed by institutions or school environments, is responsible for 80% of our knowledge. Citizens of every age can explore not only their local environment and landscape, but also – as tourists – that of other European countries, where other peoples have lived before the Romans.

10 YOURS OR MINE? VIRTUAL TOOLS IN COMMUNICATION WITH DIFFERENT HERITAGE STAKEHOLDERS

Abstract author(s): Loy, Aida (Independent Researcher)

Abstract format: Oral

As heritage professionals we tend to look at heritage from a scientific and researcher point of view. But, heritage is much more to many other people: local communities, regional audience, different governments, tourists, other kind of scholars... The goal of this project is to become a tool (one of many possible) in an open communication between heritage professionals stakeholders and the other groups of stakeholders.

To reach our goals, the project is based in virtual models and reconstructions of several archaeological items and sites. Once created, the models were shared with different stakeholders as a first step on the communication project. After these first steps, the question we try to answer is how to keep that communication open and make it two way.

With this presentation we will show the start of this project and the expected ways to keep it growing, while at the same time, finding better ways to maintain an open communication among the diverse heritage stakeholders.

A. PERFORMING THE PAST: USING ANCIENT CRAFTS TO TELL THE TALES OF ARCHAEOLOGY AT HENGISTBURY HEAD, BOURNEMOUTH, UK

Abstract author(s): Delbarre, Gabrielle (Bournemouth University; Hengistbury Head Visitor Centre) - Scott-Pratt, Hayden (Bournemouth Christchurch Poole Council; Bournemouth University; Hengistbury Head Visitor Centre) - Russell, Megan (Bournemouth University; Hengistbury Head Visitor Centre) - Holloway, Mark (Bournemouth Christchurch Poole Council; Hengistbury Head Visitor Centre)

Abstract format: Poster

With over 12,500 years of continuous human habitation and use and over 1 million visitors annually, Hengistbury Head, Dorset, UK, provides an exceptional base from which to engage members of the public and demonstrate the value of shared heritage. This poster presents a new concept of public participation for the preservation and dissemination of internationally important local heritage through volunteer programmes and public events. The Hengistbury Head Visitor Centre (HHVC) opened its doors to the public in 2014, engaging visitors through traditional dissemination methods e.g., interpretation panels, films, and display cases. Following a 'volunteers and visitors' survey of their experience of HHVC which highlighted the desire for more hands-on activities and contact with archaeological specialists, the Performing the Past (PTP) project was born in 2019.

PTP (2019-2022) is a volunteer-led, reflexive project which has engaged in a 'ground-up' approach to heritage dissemination by enlisting local volunteers, training them in experimental archaeology and then enabling them as heritage communicators. This has been achieved through public, hands-on craft workshops and demonstrations focused on the different ancient crafts practiced at Hengistbury Head from the Upper Palaeolithic to the Iron Age. This has resulted in a legacy of trained volunteers who continue these events as part of museum practice at HHVC. The attendance of over 3,000 members of the public to workshops and events, over 10,000 visitors to a PTP project exhibition alongside testimonials demonstrates the success of this approach in reinforcing awareness, a sense of ownership of and over local heritage and the benefits of inter-generational inclusivity. A new project is being developed at the HHVC, building upon the foundations laid by PTP to explore the less tangible aspects of human life and cultural heritage and to explore the effect of participation in experimental archaeology on mental health.

611 HERITAGE GOES TO SCHOOL. THE IMPORTANCE OF ARCHAEOLOGICAL DISSEMINATION IN EDUCATION

Session theme: 3. Heritage Narratives and Representations

Session organisers: Espinosa, Isaac (Universidad de La Rioja) - Loy, Aida (Independent researcher) - Larrauri Redondo, Sergio (Instituto de Estudios Riojanos)

Session format: Regular session

During the last years archaeology has been widely introduced in schools. The need for a humanistic education and the importance of archaeology to understand the relationships between people, societies and their environment, have allowed a great development of heritage skills at basic educational levels. The main objective of this session is for the participants to expose different projects that are carried out in education for the dissemination of archaeology for schoolchildren and help train teachers in the field of archaeology, its dissemination and teaching it to students. Different points of view are welcome. From presentations based on basic projects in which a site is explained to new ways of exhibiting the many facets that archaeologists, teachers, disseminators and professionals can present to disclose archaeological assets to students. Participants in this session can discuss how they think such technologies can be used differently with different stakeholders. New points of view in the teaching of archaeology in education are welcome.

ABSTRACTS

1 THE DISSEMINATION OF ARCHAEOLOGY AND HERITAGE IN THE SCHOOL. THE EXAMPLE OF THE MENNAISIAN SCHOOL IN SANTO DOMINGO, LA RIOJA

Abstract author(s): Espinosa, Isaac (Universidad de La Rioja & Instituto de Estudios Riojanos)

Abstract format: Oral

Secondary education and high school are very important moments for the creation of synergies and sensitivities with respect to archaeology, sites, heritage and human sciences. Disclosing these aspects in the classroom is reflected in the medium and long term, creating awareness that seeks to care for their closest history, culture, heritage and archaeological assets.

In the case of the Mennaisian school in Santo Domingo de la Calzada, in La Rioja, in the north of Spain, a small school, in a small but important town, not only regionally, but also for the Camino de Santiago, carried out a project that has

its division in all the educational levels of the center. This disclosure will be exposed by approaching the different elements used for this, such as the use of files, new information technologies, visits and talks at sites and reproductions of archaeological tools and techniques. To do this, different techniques are used for cabinet and field work, such as the development of own files or resin reproductions.

All this seeks a better understanding of the objective by the students.

2 COMMUNITY ARCHAEOLOGY: A WAY FORWARD TO PROTECT OUR HERITAGE

Abstract author(s): Thakur, Renu (Panjab University)

Abstract format: Oral

The present paper studies the importance of the community archaeology in protecting our heritage for posterity. 'Community Archaeology' is not a new concept but is a fresh opportunity. We need to adopt it as it enriches archaeology. It helps us to see the past from a different perspective. The role of community is foremost in heritage preservation. The community however has to be trained to own the past created by the archaeologists. No doubt it is time consuming and challenging but this is the only way forward to preserve the past. Communities usually are of different mindsets and hence are unable to own different projects. At all stages of heritage conservation, the community should be actively involved to facilitate collaborations for dialogue and idea exchange between archaeologists and community participants. However, community archaeology has not been a popular approach in India. Through some case studies the author would try to show that how lack of community interaction is endangering our heritage. There is thus an urgent need to find innovative ways to connect to our communities.

3 EDUCATION OF THE PAST, PATH TO THE FUTURE

Abstract author(s): Borgia, Elisabetta - Venditti, Caterina (Ministry of Culture, Italy)

Abstract format: Oral

The social and identity value of cultural heritage is strengthened where communities are deeply aware of its potential as individuals and territories growth factor, and play an active role in the protection, dissemination and regeneration of CH.

Various actors have been working in this field through concrete actions, directed above all towards the youngest, moving progressively from a didactic axis to a wider educational one, with the aim to enhance individual development, reinforcing critical, dialogical, emotional and creative abilities, towards active citizenship skills.

Educational services in our places of culture have committed to connecting heritage, schools and communities, so that they can establish the framework of a social sustainability oriented to the themes of dialogue, accessibility and enhancement of everyone's cultural achievement.

In such a context, archaeological heritage plays a key-role, being the physical proof of the strong network "history-places-people". It discloses influences and contaminations that reconnect communities and inspire other possible narratives, giving soul, nerves and muscles to people who belong to the ancient past in which everyone find both his history and stories.

The most recent revolution of AI and its massive spreading in humanities is going to revolutionise the way we teach and learn, making education more accessible and customised, changing the approach to the research and the study of the ancient times, offering insights previously unavailable. The updated need to rethink and revise educational issues, encouraging critical and ethical reflection, concerns all the stakeholders, from the Government to the communities, passing through schools, teachers and citizens, exchanging views and purposes.

Starting from experiences carried out and looking to future outcomes, we aim to present the polyhedric panorama of educational projects involving archaeology and young people from the point of view of the Direction General for Education, research and cultural institutes of the Italian Ministry of Culture.

4 'THIS IS THE ONLY LEARNING I GET ALL WEEK' THE POWER OF ARCHAEOLOGICAL LEARNING IN (AND OUT OF) THE CLASSROOM

Abstract author(s): Barclay, Rebecca - Miller, Jane (Archaeology Scotland)

Abstract format: Oral

Within the heritage sector the benefits of archaeological learning are relatively well understood. Archaeology can tell stories from our shared past, including those of adaption, resilience, gender, religion and ethnicity, themes correlating with current educational priorities in Scotland - sustainability, diversity and global citizenship. It facilitates place-based outdoor learning and team working, through this improving health and wellbeing and social inclusion. Archaeology supports transferable skills development through inclusive and tactile approaches. Despite these benefits,

archaeology is not widely used in Scottish schools, there are no formal qualifications and teachers do not actively seek out archaeology resources and activities.

As Lead body for Aim 4 of Scotland's Archaeology Strategy – Encouraging Greater Engagement - the Archaeology Scotland learning team are working to change perceptions of archaeology in Scottish education. We do this through our learning programme, which includes keystone projects such as Attainment through Archaeology, a skills-based initiative for young people struggling to engage in mainstream education, and the Heritage Hero Awards, a wider achievement award for history, heritage and archaeology, designed to celebrate achievements in heritage projects and place them in the educational mainstream. Our projects are developed with the learner at their core, not bolted on to larger archaeology fieldwork projects but specifically designed for, and with, young people, creating positive outcomes for individuals and communities.

We oversee the Archaeology and Learning Working Group, a consortium of professionals from archaeology and education. The group work in partnership to promote archaeological learning in Scotland, through research, governance and capacity building with the provision of resources and Career-Long Professional Learning opportunities for teachers.

This presentation will introduce these key elements of our learning programme, and partnerships in turn. Highlighting the benefits, challenges, and potential for these in supporting the use of archaeology in Scottish schools.

5 INCORPORATING ARCHAEOLOGY INTO HISTORY SCHOOL TEXTBOOKS: CHALLENGES AND SOLUTIONS

Abstract author(s): Giovannetti, Chiara (Università di Roma La Sapienza)

Abstract format: Oral

Within the Italian school system, it is important to integrate archaeology into the history curriculum. The question is how to do this effectively. This study examines the representation of archaeology in elementary and middle school history textbooks in Italy, using a sample of books published between 1999 and 2021.

The study analyzed the mentions of archaeological research and findings in each book and analyzed the context in which they were referenced. The images of archaeological objects and sites were also preliminary analyzed to identify any issues.

According to the results, there appears to be both a quantity and quality problem with the representation of archaeology in Italian history textbooks. Archaeology is largely absent, and its presence is often limited to “artistic” and “special” findings or auxiliary content.

This has several negative consequences, such as depriving the history narrative of the material culture perspective, especially with regards to minority groups who produced little written documentation. Archaeology is also often portrayed as a “treasure hunt,” downplaying the need for study and expertise. Additionally, daily life objects are often ignored, making it difficult to discuss the relationship between people and their environment.

To address these issues, it is important to take responsibility for the data produced, as it will eventually appear in school textbooks. Making the data more accessible, not only through sharing it, but also by making it more “teacher-friendly,” is key. We are in need of new solutions that can be effectively integrated into the current school curriculum. One proposal that will be explored is the creation of an archaeological database that is linked to the emotional sphere.

6 HERITAGE EDUCATION – NEW EXPERIENCES FROM THE NETHERLANDS

Abstract author(s): van Oorsouw, Marie-France (Independent) - Schreurs, José (Cultural Heritage Agency of The Netherlands)

Abstract format: Oral

In The Netherlands, archaeology and heritage are not part of the regular curriculum in primary schools. Hunter-gatherers, farmers and Romans come along in history classes, but the way we get familiar with them and with their living world through research doesn't.

Teachers and schools with special interest in archaeology are positive exceptions. They make their own additions to the curriculum, helped by local museums, heritage volunteering groups and/or environmental education centres. Heritage organisations try to seduce more schools and teachers to address this theme by offering educational packages, workshops and guided tours. The initiative for creating such packages traditionally comes from the heritage organisation, though.

Lately, there seems to be a change going on: more and more requests for educational packages or workshops come from the side of the schools. This is a gladdening development, and hopefully incorporation of archaeology and heritage in the formal curriculum will be the next step.

This concerns mainly primary schools, but there is also a trend in disseminating heritage and archaeology to vocational training. Initiatives come from the Cultural Heritage Agency of The Netherlands and universities, preferably in collaboration with the training institutions themselves.

The Cultural Heritage Agency for example develops a course for students that will be involved in nature management, such as foresters. Having general knowledge of archaeology and heritage, they are better prepared for working with these phenomena in the field, and for recognising and protecting them. The University of Groningen shares the results of a research project on early Dutch animal husbandry with future farmers through an educational module. In this way they get aware of the choices that early farmers had to make and how they are similar to their own. In this paper, several examples of archaeology and heritage education in The Netherlands will be discussed.

7 ARCHAEOLOGY LEGACY: DESIGNING A DIGITALLY INNOVATIVE EDUCATIONAL RESOURCE

Abstract author(s): Cooper, Clemency - Elleray, Jessica (Oxford Archaeology)

Abstract format: Oral

In England, new ideas about the past discovered through development-led archaeology are not automatically fed into mainstream education. Opportunities to engage with young people are often constrained by the demands of the national curriculum, the timeline of the archaeological project and a lack of public benefit provision. It is unusual then, to have the opportunity to research, evaluate and consult with educators about the best way to share archaeological information with their young people.

The Archaeology Legacy project is a collaboration between Oxford Archaeology and National Highways, funded through their Designated Funds, which aims to connect children and young people to the potential archaeology offers, to teach them about their local heritage and inform their futures.

In 2022 we completed a feasibility study, engaging with 26,500+ individuals and organisations to understand the needs of various educational settings including schools, youth groups and home education. Significantly, the consultation was conducted post-COVID, giving us a picture of educators' attitudes towards digital resources after the pandemic. We found a deficit of widely accessible and digitally innovative resources, that allowed young people to benefit from development-led archaeology.

This has been a unique opportunity to step back and learn exactly what educators are looking for. The results of the study challenged many of our assumptions and are encouraging us to think differently about resource creation, digital assets and the educational benefits of archaeology. During our presentation we will share our findings and explore how evidence from our consultation has informed the next phase of the project, which proposes to co-create a video game with young people, designed with a supporting suite of resources that can be adapted by educators for use in multiple contexts.

8 MUSEUMS, ARCHAEOLOGY, AND NON-FORMAL EDUCATION IN HUNGARY

Abstract author(s): Pálinkás, Adrienn - Czifra, Szabolcs - Fábíán, Szilvia (Hungarian National Museum)

Abstract format: Oral

Learning History, including archaeology, aims to acquaint students with the most important historical facts, characters, events, and traditions. The subject of History - in line with other school subjects - used to begin with prehistory, but lately, prehistoric and archaeological topics have been largely missing from the school curriculum in Hungary.

This paper presents the Hungarian National Museum's goals to acquaint students and young adults with archaeology using best practice approaches for on-site and online programmes. The role of museums within the archaeological field of activities (exhibitions, programmes, activities, publications) has become even more essential for informal education. Parallely with the modified social expectations, museums are compelled to make their exhibitions even more understandable and playful for students and thus, future adults.

Archaeological heritage constantly faces the challenge of being invisible, even forgotten. Especially underground heritage that was worn down by the passage of time. The Danube's Archaeological eLandscapes EU-funded project provides a good example of how new technologies can help to make archaeological heritage alluring to the masses in a completely new way as well as accessible to the public using innovative and attractive approaches. By incorporating Virtual Reality (VR) and Augmented Reality (AR) technologies, museum visitors are encouraged to learn about the rich archaeological heritage within the museum exhibitions and the context of the landscapes from which it comes from.

Acknowledgement

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LIVING AND DYING IN THE MIDDLE AGES: BIOARCHEOLOGICAL APPROACHES TO HEALTH, DISEASE, AND DISABILITY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Dittmar, Jenna (Department of Archaeology, University of Aberdeen) - Oxenham, Marc (School of Archaeology & Anthropology, The Australian National University) - Crozier, Rebecca (Department of Archaeology, University of Aberdeen)

Session format: Regular session

The Middle Ages (5th -16th centuries CE) in Europe were characterised by both extreme and often far-reaching political, economic, social and climactic changes. The development of new methods and techniques within the fields of osteoarchaeology and bioarchaeology has facilitated exciting and innovative avenues of research into the health, lifestyles, origins, movements, and the experiences of those that lived (and died) during this turbulent period in history. By drawing together multi- and interdisciplinary papers, this session aims to explore and contextualise the lived experiences of individuals and communities throughout the medieval world.

We welcome contributions that explore topics including, but not necessarily restricted to: (1) experiences of physical impairment (including the inferred or clear provision of treatment and/or care) whether driven by disease experience, congenital dysplasia(s) or trauma; (2) evidence for and the implications of physiological stress in the context of disease, dietary insufficiencies, socio-economic disparities, social and technological transitions (e.g., changes in the nature and structure of medieval urban and rural settings) or other major socially, environmentally, and climatically mediated events; (3) palaeodemographically mediated and/or visible impacts in health and disease, such as rates of natural population increase, fluctuating fertility, and maternal mortality; (4) mobility broadly construed (assayed by way of traditional osteological investigations, stable isotopic analyses, and/or aDNA approaches) and including migration patterns, relatedness, kinship, and post-marital relocation customs to name a few. Papers that explore aspects of medieval life using a multi- or interdisciplinary approach are particularly welcome.

ABSTRACTS

1 DISTANT CITIES: ASSESSING THE IMPACT OF DUTCH MEDIEVAL DEVELOPMENTS ON URBAN AND RURAL HEALTH USING RESPIRATORY DISEASE AS A PROXY

Abstract author(s): Casna, Maia - Schats, Rachel - Hoogland, Menno - Schrader, Sarah (Leiden University)

Abstract format: Oral

Starting from the 6th century AD onwards, many regions in the area today encompassed by the Netherlands underwent significant economic and societal changes. With the population gradually increasing and trading systems expanding, the first cities began to grow. Alongside urban centers, the demand for agricultural products increased accordingly. All these large scale developments likely had an impact on the daily lives of medieval people. In urban centers, problems such as overcrowding, precarious working conditions, and limited access to resources severely impacted the wellbeing of citizens. In the countryside, on the other hand, intensification of production likely exposed workers to several other hazards (e.g., adverse weather conditions, occupational risks).

In this framework, respiratory diseases have often been studied under the assumption that the general worsening of both living and working conditions would result in increased risk of respiratory stress among populations. To investigate this for the Netherlands, we analyzed patterns of respiratory stress across time, testing the presence of chronic maxillary sinusitis, otitis media, and inflammatory periosteal reaction on ribs on a sample (N=376) from both rural and urban environments, dating from both the early-middle ages (AD 400-1080) and the late-middle ages (AD 1298-1576). Statistically significant associations were found between time periods and settlement type for both sinusitis (rural: $p=0.001$; urban: $p=0.007$) and otitis media (urban: $p=0.001$), indicating that factors such as increased contacts between towns and countryside, augmented population densities, and intensification of agricultural production impacted respiratory health. Our results suggest that historical developments influenced the respiratory health of past Dutch populations both in rural and urban settings. Further research in different contexts is advised in order to continue exploring urbanization and its impact on human health across both time and space.

2 AN EXAMINATION OF OTITIS MEDIA IN MEDIEVAL SCOTLAND AND IRELAND THROUGH THE MEDIEVAL CLIMATE TRANSITION

Abstract author(s): Roshem, Irmine - Dittmar, Jenna (University of Aberdeen) - Carlsson, Stine (Queen's University Belfast) - Crozier, Rebecca (University of Aberdeen) - Oxenham, Marc (Australian National University; University of Aberdeen) - Murphy, Eileen (Queen's University Belfast)

Abstract format: Oral

Otitis media is an infection of the middle ear that is common during childhood. In archaeological human skeletal remains, evidence of chronic otitis media can be identified by the formation of new bone on the promontory surface of the middle ear. Although relatively common today, very few studies have explored the prevalence rates of chronic otitis media in past populations. This research seeks to explore the prevalence rate of otitis media in the medieval populations of Scotland and Ireland, considering the 14th-century climate transition from the Medieval Warm Period to the Little Ice Age. To do this, the middle ears of adult individuals (>18 years of age) from two medieval Irish sites – Ballyhanna (n=273), Ranelagh (n=106) – and three Scottish sites – Aberdeen Carmelite Friary (n=107), Aberdeen Franciscan Friary (n=7), and the Kirk of Saint Nicholas (n=108) – were examined using an endoscope. The results show that the raw prevalence rate of otitis media in Scotland (55%) was greater than in Ireland (34%). The relative risk calculations revealed that people in medieval Scotland were 60% more at risk of developing otitis media than people in Ireland ($p < 0.0001$). Although in Scotland males were 10% more at risk than females ($p = 0.4665$), in Ireland females were 6% more at risk of developing evidence of otitis media than males ($p = 0.6683$). The disparity observed between sexes suggests that men and women experienced different levels of exposure to environmental factors that affect the wider upper respiratory system such as exposure to particles from open fires, crafts or agricultural-related activities. The evolution of this disparity between groups living before and after the medieval climate transition is further investigated to identify the role of climate in the development of chronic otitis media.

3 HEALTH AND STRESS IN MEDIEVAL IRELAND AND SCOTLAND: PRELIMINARY RESULTS OF CRIBRA ORBITALIA ANALYSIS

Abstract author(s): Carlsson, Stine (Queen's University Belfast; University of Aberdeen) - Murphy, Eileen (Queen's University Belfast) - Crozier, Rebecca (University of Aberdeen) - Oxenham, Marc (University of Aberdeen; Australian National University) - Dittmar, Jenna - Roshem, Irmine (University of Aberdeen)

Abstract format: Oral

The presence or absence of skeletal indicators of non-specific stress can be a useful proxy for evaluating health status or stress levels in past populations. Cribra orbitalia (CO) are porotic lesions presenting on the roof of the orbits, usually attributed to various types of anaemia. These can be formed from anaemias due to several nutritional deficiencies, parasitic infections, or genetic conditions. For the purposes of this research, CO has been used as an indicator of non-specific stress, and the prevalence of CO as a proxy for levels of stress in a given population. In this study, the prevalence of cribra orbitalia has been evaluated for three medieval Irish sites (Stacumny House, Ranelagh, and Ballyhanna) and four medieval Scottish sites (The Kirk of St Nicholas, Aberdeen Carmelite Friary, Tullilum Carmelite Friary and Linlithgow Carmelite Friary), in order to examine levels of stress within and between these populations. Stature has also been compared within and between populations, as a further indicator of nutritional and pathological stress. Preliminary results of this research show markedly higher prevalence rates of cribra orbitalia in Ireland than in Scotland. The effects of the underlying geology, environmental changes, cultural, or dietary differences, could all explain these results, which will be evaluated within the temporal, archaeological, environmental, and socioeconomic context in order to examine these significant differences.

4 LIFE IN THE NORTH: AN EXAMINATION OF EARLY-LIFE CONDITIONS, STATURE, AND BODY PROPORTIONS IN MEDIEVAL AND EARLY MODERN SCOTLAND

Abstract author(s): Dittmar, Jenna (University of Aberdeen) - Meneghetti, Francesca (University of the Highlands and Islands) - Crozier, Rebecca (University of Aberdeen) - Oxenham, Marc (Australian National University)

Abstract format: Oral

The medieval and early modern periods (900-1800AD) in Scotland were characterised by drastic political, economic, social and climatic changes. The extent to which an individual was affected by these changes, and how such changes impacted health, was dependent upon many social and biological factors. This research aims to explore the relationship between early-life conditions and skeletal growth outcomes, specifically adult stature and relative limb proportions, throughout this notoriously turbulent period in history. As variation in stature and relative limb proportions can reflect differential exposure to environmental stress during growth, measurements of intact long bones including the femur, tibia, humerus and radius were obtained from 328 individuals from northeast Scotland. The maximum length of the femur was used as a proxy for adult stature and relative limb length proportions (brachial and crural

indices) were calculated. A significant increase in mean stature in males was observed from the medieval to the early modern period ($p=.03$); a trend not found in females. This may suggest improved environmental and/or nutritional conditions which enabled a greater degree of sexual stature difference. However, greater variation in stature in both males and females was also observed during the early modern period, which may indicate an increase in the social and economic disparities experienced by the population during this time. This talk will explore the relationship between osteological indicators of physiological stress and overall growth outcomes within different social groups in order to examine the impact of underlying inequalities in early-life conditions and later life outcomes.

5 DEMOGRAPHIC IMPACTS OF THE PLAGUE AND GREAT POX IN 15TH-17TH CENTURY ABERDEEN

Abstract author(s): Oxenham, Marc - McFadden, Clare (Australian National University) - Dittmar, Jenna - Crozier, Rebecca (University of Aberdeen)

Abstract format: Oral

The population of Aberdeen reportedly suffered from the plague and the Great Pox – widely believed to be syphilis – from the late 15th century onwards. Thanks to the swift action of authorities, both diseases were relatively well controlled for some time. Despite these efforts, Aberdeen was struck by its most significant outbreak of the plague in 1647, suffering substantial loss of life. Less is known about the impacts of syphilis on the population, but due to its comparatively low mortality rate it seems probable that management was largely driven by the undesirable symptoms and stigma of the disease. Syphilis likely had impacts that were less immediately recognisable to health authorities, such as late pregnancy and infant loss, and congenital syphilis. In this paper we take a multi-faceted approach to the study of the plague and syphilis in 15th-17th century Aberdeen, incorporating evidence from bioarchaeology and history, and comparing potential models of the impacts of these diseases on the population with regard to mortality, birth rate, and infant loss. We show how such an approach can help to overcome the punctuated and sparse nature of archaeological and historical sources.

6 LIFE AND DEATH AT LA OLMEDA (SPAIN, 6TH-11TH C. CE): GENETIC TRANSITION AND DISEASE BURDEN DURING THE MIGRATION PERIOD

Abstract author(s): Coppola Bove, Lorenza (Max Planck Institute for Evolutionary Anthropology; University of Granada, Department of Legal Medicine, Toxicology and Physical Anthropology) - Villalba-Mouco, Vanessa (Max Planck Institute for Evolutionary Anthropology) - Kirkpatrick, Casey (Max Planck Institute for Evolutionary Anthropology; University of Western Ontario, Department of Anthropology) - Rohrlach, Adam (Max Planck Institute for Evolutionary Anthropology; School of Computer and Mathematical Sciences, University of Adelaide) - Lamnidis, Thiseas (Max Planck Institute for Evolutionary Anthropology) - Vigil-Escalera Guirado, Alfonso (University Carlos III de Madrid) - Botella López, Miguel (University of Granada, Department of Legal Medicine, Toxicology and Physical Anthropology) - Krause, Johannes (Max Planck Institute for Evolutionary Anthropology; Friedrich Schiller University) - Bos, Kirsten (Max Planck Institute for Evolutionary Anthropology)

Abstract format: Oral

The transition from Late Antiquity to the Early Middle Ages in the Iberian Peninsula encompassed a dynamic period of population change due to the displacement of local people, migrations from neighboring regions, and epidemic outbreaks. Infectious disease risk may have increased during this time due to growing urban centers, increasing commercial trade, and the establishment of the religious route to Santiago de Compostela. Together these phenomena contributed to regional social and political changes that are incompletely described in the historical record. In this study, we sought to investigate both population-level genetic changes and disease burden during this time transect through analyses of a community from the Roman villa of La Olmeda (Palencia, Spain, 6th – 11th centuries CE). Genomic human DNA data from 51 individuals, representing all time transects, were investigated to evaluate broad changes in population composition from a genetic perspective over time. These data were paired with genetic and skeletal morphological analyses focused on the identification of infectious diseases. Together, these data provide a new perspective on the population of La Olmeda and the infectious diseases that impacted daily life in this prominent commercial and agricultural center during a period of considerable change.

7 BEHIND THE PLAGUE: PALEOPATHOLOGY IN THE LAST PHASE OF THE MEDIEVAL CEMETERY OF SAN MICHELE (ALGHERO, SASSARI -SARDINIA)

Abstract author(s): Serra, Rita (Department of History, Human Sciences and Education University of Sassari; Department of biomedical sciences, University of Sassari) - Bini, Anna (Department of History, Human Sciences and Education University of Sassari) - Bandiera, Pasquale (Department of biomedical sciences, University of Sassari) - Milanese, Marco (Department of History, Human Sciences and Education University of Sassari)

Abstract format: Oral

Located in northwest Sardinia, Alghero is a modern city, with Catalan culture and languages, whose Aragonese foundation is dated to the middle of the 13th century. To this period is related the area of San Michele, a medieval cemetery with five different phases of usage between the 13th and the 17th century AD. The last two phases, called “phase 4” (dated to 1582/1583) and “phase 5” (dated between the ends of the 16th and the 17th century) are related to an epidemic of *Yersinia pestis*. The former is characterized by trench burials, and the latter, maybe related to the last part of the epidemic, by multiple burials with different numbers of individuals in them; in most cases, these burials are aligned in a trench-like order. These tombs, for which family relation hypothesis studies are in progress, were subjected to anthropological and paleo-pathological analysis. The results show numerous pathological conditions that are not related to *Yersinia pestis*. In T.168, for instance, two people (one adult and one subadult) had evidence of *Spina bifida*. Another interesting burial is T.151, a tomb that contained two adult females. Both of these individuals had diffuse macro-porosity, fractures, and lesions that requires further macroscopic and microscopic analyses. Though this study is ongoing, these findings show that the plague was only one aspect of a more complex reality.

Acknowledgment: FAR-Uniss.

8 EXPLORING BIOMECHANICS AND CARE OF PHYSICALLY IMPAIRED INDIVIDUAL IN MEDIEVAL IRELAND

Abstract author(s): White, Jessica (Queen’s University Belfast)

Abstract format: Oral

This research focuses on the locomotion and daily life of a physically impaired middle-adult male (Sk67), from early medieval Ireland who suffered a femoral head fracture. The levels and patterns of habitual biomechanical stress are reflected in the quantity and distribution of cortical bone in the diaphysis and it is based on this assumption that allowed comparison of upper and lower limbs for signs of weight-bearing using cortical bone thickness (CBT) of antero-posterior and medio-lateral measurements from radiographs, revealing the level of function after injury. In addition, the upper limbs were examined for enthesal changes (Knüsel et al. 1993; Villotte et al. 2016; O’Reilly 2016) to indicate any use of walking aids. Using information from the CBT analyses, macroscopic analyses, and knowledge of human limb biomechanics, a 3D musculoskeletal model of Sk67 was developed using OpenSim, and gait was simulated with SCONE software revealing a visual locomotive model of Sk67’s limb function after impairment along with gait analysis data corresponding to the CBT and macroscopic analysis previously carried out. However, disability is not defined by a set of disease conditions; individuals will have different experiences of their condition depending on their socioeconomics. Therefore, macroscopic analysis of bone alone cannot infer the day-to-day quality of life of an individual and their associated limitations in activity. Based on the interdisciplinary analyses of this study and historical evidence a bioarchaeology of care profile was established revealing that they would have needed assistance for a couple of months post-injury, and likely used two axillary crutches to regain mobility and independence after their impairment. However, it would have been unlikely for him to contribute to his community as a typical male for that time following his impairment.

9 OSTEOBIOGRAPHICAL INVESTIGATION OF DISABILITY AND CARE IN THE EARLY MIDDLE AGES FROM ITALY

Abstract author(s): Micarelli, Ileana (McDonald Institute for Archaeological Research, University of Cambridge) - Zeppilli, Carlotta (Department of Environmental Biology, Sapienza University of Rome)

Abstract format: Oral

The bioarchaeological characterisation of disabled individuals from the past is particularly challenging because it pushes the boundaries of the interpretation of pathologies recognisable on human remains. The osteobiographical approach offers a possible framework in which human remains are studied to understand not only the embodied experience during life but also to frame people as playing diverse social roles (e.g. patient, healer, doctor, carer) in different times during life. Considering the meaning of disease, treatment methods, and caregiving customs, the Italian Peninsula in Post-Classical times offers the ideal scenario. This abstract aims: (1) to use the osteobiographical approach to explore a life narrative of a male (T90/5) in need of care from the site of Selvicciola (4th-7th c. CE, Italy) and (2) to contextualise the impact of his health status on his community. Visual inspection, CT-scan and X-rays

were used for palaeopathological assessment and biomolecular analyses to investigate the diet. The results show that a mature male survived at least two traumatic events and an injury of the left femur neck shortly before death. Surviving multiple traumas should be interpreted as a severe chronic condition. This caused several problems during the first phases (blood loss, infections) and long-term recovery. To survive, T90/5 was cared for by the community not only to avoid severe conditions in a pre-antibiotic era but also to sort out biomechanical activities. Stable carbon and nitrogen analyses on bone collagen show a dietary intake consistent with the rest of the group. His burial was a lithic stone coffin, close to other burials, indicating he was buried like the other community members. Osteological investigations (paleopathological assessment, biomolecular analyses) and burial evidence of social inclusion indicate a probable adoption of alternative tasks for subject participation in community life.

10 YOUTH IN DISABILITY- A CASE STUDY OF A YOUNG ADULT FROM AN EARLY MEDIEVAL CEMETERY IN NORTHWESTERN BOHEMIA

Abstract author(s): Witan, Joanna (University of West Bohemia in Pilsen; Institute for Preservation of Archaeological Heritage of Northwest Bohemia) - Mackiewicz, Klementyna (University of West Bohemia in Pilsen) - Szczurowski, Jacek (Wrocław University of Environmental and Life Sciences) - Crkal, Jiří (Institute for Preservation of Archaeological Heritage of Northwest Bohemia) - Čavka, Mislav (University Hospital Centre Zagreb)

Abstract format: Oral

Deformities and degenerative changes of the vertebral column are one of the more frequent abnormalities observed not only in historic and prehistoric populations but also in modern times. The aetiology of these lesions can be highly variable and with significant pathological changes can be difficult to establish. Nevertheless, individuals with severe deformities or degeneration may suffer from numerous life-limiting problems such as severe pain or neurological complications.

Excavations at the early medieval cemetery of Poláky-Dolany in 2022 (north-western Bohemia Chomutov district) revealed an H10 burial, in which the body was positioned in an unconventional manner - the entire torso and lower limbs of the individual were strongly rotated to the right. During anthropological analyses, the sex and age of the individual was determined to be male, with a maximum age of 20-21 years at the time of death. The greatest pathological changes were observed in the thoracolumbar region, as there was almost complete destruction of the vertebral bodies from Th7 to L3 and the formation of angular kyphosis due to the fusion of the vertebral remnants. In addition, there are advanced osteolytic lesions on the Th1-Th6 vertebrae. Such severe lesions may develop as a result of compression fractures, osteomyelitis or tuberculosis and it is primarily these conditions that should be considered in the differential diagnosis. However the vertebral lesions developed while the individual was still in progressive ontogeny entailed a number of morphological changes that were fixed in the skeleton by the young age of the individual.

The aim of this study is to establish the disease that affected the individual from grave H10 and to reconstruct, on the basis of the morphological changes in the bones, the mobility restrictions and neurological problems that he had to face on a daily basis.

11 DISABILITY AND SOCIAL CARE IN MEDIEVAL TRANSYLVANIA (ROMANIA): A BIOARCHAEOLOGICAL CASE STUDY FROM THE BRAȘOV CEMETERY

Abstract author(s): Diana, Annamaria (Terra Ultra Silvam Archaeology) - Marcu Istrate, Daniela (Institutul de Arheologie Vasile Parvan) - Toso, Alice (Bonn Center for ArchaeoSciences - BoCAS, Institut für Archäologie und Kulturanthropologie, Rheinische Friedrich-Wilhelms-Universität) - Bianco, Elizabeth (CUNY Hunter College)

Abstract format: Oral

This paper presents the results of the interdisciplinary osteo-biography performed on a case study from the medieval cemetery of Brașov, a city located in the historical region of Transylvania (Romania).

Skeletal remains from burial context M 667 were cleaned and catalogued for osteological analysis. Upon visual inspection, it was evident that the right lower limb of the skeleton, a male adult, was comparatively smaller in general size and length, than the left side. This abnormality was also observed at the level of the right side of the pelvis. Site photos of the fully exposed skeleton at excavation confirmed the size difference and illustrated an unusual burial position with the individual's right leg awkwardly bent and the left leg completely extended.

The case of individual M 667 sparked many questions. What was their social status? How did they walk? How were they treated by the community? Because of the breadth of our inquiries, we integrated information from the archaeological context and the interpretation of the burial ritual with the individual's biological/pathological profile and isotopic values from their teeth and bones to achieve a comprehensive view of the pathological condition causing their disability as well as how this impairment might have affected quality of life and longevity.

We know that they survived into adulthood despite a crippling condition which caused ambulatory difficulty and, possibly, other related complications. The question that remains is if this person was taken care of throughout their life,

and supported by family members and/or the wider community, or if they were outcast because of their impairment. We will discuss whether bioarchaeological, clinical, and historical evidence support either possibility.

12 HOW TO COPE WITH ADVANCED OSTEOARTHRITIS IN EARLY MEDIEVAL ITALY: A LIFE NARRATIVE OF AN ELDERLY WOMAN

Abstract author(s): Zeppilli, Carlotta (Department of Environmental Biology - Sapienza University of Rome) - Miccarelli, Ileana (McDonald Institute for Archaeological Research, University of Cambridge)

Abstract format: Oral

Osteoarthritis is a widespread pathological condition nowadays, as in the past. We present a case of severe degeneration of the coxofemoral joint in an old adult female buried in the Early Medieval cemetery of Selvicciola (Italy, 6th-8th c CE). In particular, the skeleton shows advanced deformation and bone remodelling of the right acetabulum. As a result, bone production extends up to the neck of the femur, locking its head within the acetabulum. Furthermore, the femoral head shows extensive porosity and eburnation, such as in the lateral condyle in the distal epiphysis of the right femur.

The objective is to detect the consequences of this unilateral pathology, whether and how much the pathology had restricted movements and, consequently, this woman's life.

After the macroscopic and palaeopathological examination of the skeleton, digital acquisition of the femurs and tibiae of both sides was obtained through a CT scan to deepen the effect on the cortical thickness of the lower limbs by a virtual approach. Then, the R package morphomap was applied to extract the differences in cortical thickness and biomechanical parameters along the entire diaphyses of the lower limbs.

Comparing the diaphyses of the lower limbs, the pathological femur shows a reduction in cortical thickness compared to the non-pathological one. Furthermore, cross-sectional geometry parameters (polar moment of inertia) confirm the left lateralisation in the femurs. On the other hand, a similar distinct difference was not observed in the diaphyses of the tibiae.

Our results suggest that this elderly woman experienced a reduction in movements in the lower limb, difficulties in walking and a significant amount of pain. She suffered from a degenerative condition that could not be healed, but she survived for years. She needed long-time care, and likely someone in her community cared for her during the last years of her life.

13 AGE-RELATED CHANGES OF FACIAL SKELETON IN ADULTS FROM MEDIEVAL CEMETERY SAMPLE IN CENTRAL EUROPE

Abstract author(s): Walczak, Anna - Krenz-Niedbała, Marta - Łukasik, Sylwia (Adam Mickiewicz University in Poznan, Faculty of Biology, Institute of Human Biology and Evolution)

Abstract format: Oral

Aging of the bone tissue results from disturbed equilibrium between bone resorption and formation, which promotes increased resorption. Those changes also apply to the facial skeleton, however they are uneven and site specific, with orbits, maxilla and mandible mostly affected.

The aim of this study was to perform an analysis of metric characteristics of the facial skeleton elements directly related to aging in a medieval population from Cedyňa (Poland) and to compare the results with the published data for modern populations. Combining the knowledge about diet-related stronger biomechanical forces in medieval than in modern times with the Wolff's law we hypothesized, that skeletal aging processes are more prominent today than they were in the Middle Ages.

In total, 230 facial skeletons of young, middle and old adults were 3D scanned. A subgroup of edentulous middle adults was distinguished. Measurements were performed using Geomagic Studio 12 and statistically analyzed within and between age categories (Kruskal-Wallis ANOVA) and between the dentate and edentulous subgroups (Mann-Whitney U-Test).

The parameters of the orbits and pyriform aperture tend to increase with age, however, this finding was significant only in males (right orbit: height $p=0.04$, left orbit width $p=0.01$, pyriform aperture surface area $p=0.03$). Maxillary height significantly decreased at right first premolar ($p=0.03$) and first molar ($p=0.02$) in females, together with mandibular ramus height (right side in females $p=0.02$). In edentulous individuals the orbits were wider ($p=0.03$ in females and $p=0.04$ in males), and maxillary and mandibular heights were reduced than in toothed individuals.

The results revealed, that the nature and direction of changes associated with aging are homogeneous in medieval and modern populations, while the intensity of those processes was lower in the past than at present.

MURDER IN THE GATEHOUSE? PLACING SKELETAL TRAUMA WITHIN THE HISTORICAL CONTEXT

Abstract author(s): Hopko, Rosalie - Dittmar, Jenna (University of Aberdeen) - Oxenham, Marc (University of Aberdeen; Australian National University) - Macdonald, Alastair - Crozier, Rebecca (University of Aberdeen)

Abstract format: Oral

Late medieval Scotland (13th-16th centuries CE) was characterized by turbulent social and political changes. This interdisciplinary study combines the fields of osteoarchaeology and history to explore interpersonal violence at Kildrummy Castle (particularly in context of its numerous sieges) and the insights this case offers into the health, lifestyles, and experiences of the individuals involved. The crania of two adult male individuals excavated from the east gatehouse at Kildrummy Castle were analyzed. The fracture types were classified using macroscopic and microscopic examination. Based on fracture morphology, the causal mechanisms and forces applied to bone were deduced. Primary source historical texts including the Scotichronicon and The Bruce were used to contextualise the archaeological findings. The skeletal trauma observed represents intentional injuries, likely sustained through violence. Sharp (SK #2), blunt, and projectile trauma (SK #1) were present. The pattern and types of fractures observed suggests that the two men involved were participants in a violent incident. The historical and archaeological evidence suggests that these individuals were killed during the Scottish Wars of Independence, likely during the siege of Kildrummy Castle in 1306. The interdisciplinary nature of this work creates a more precise narrative of events surrounding violence in late medieval Scotland and the history of Kildrummy Castle. Additional comparative studies are needed to determine how representative these findings are of the nature of violence in late medieval Scotland.

A. DIFFERENTIAL DIAGNOSIS VIA MORPHOLOGICAL AND MICROCT ANALYSIS OF A CALCIFIED OBJECT FROM AN EARLY MEDIEVAL BURIAL IN VIENNA, AUSTRIA

Abstract author(s): Strang, Sheridan (Novetus GmbH) - Luftensteiner, Katharina - Berner, Margit (Department of Anthropology, Natural History Museum Vienna) - Binder, Michaela (Novetus GmbH) - Mosser, Martin - Krause, Heike (Stadtarchäologie Wien) - Winter, Eduard (Department of Anthropology, Natural History Museum Vienna)

Abstract format: Poster

Calcification of soft tissue occurs due to a build-up of calcium secondary to inflammation and can appear all over the body, affecting areas such as organs, arteries, and joints. Although some degree of calcification is a normal side effect of ageing, oftentimes it is a sign of a more serious health condition such as atherosclerosis, neoplasm, or metabolic disease. Archaeologically, ossified objects are frequently found with skeletal remains. However, they are rarely reported in palaeopathological studies due to difficulties in diagnosing their underlying aetiology.

In 2021/2022, 40 individuals were excavated around St. Peters Church in Vienna, Austria. Radiocarbon dating determined this cemetery to be between 800 A.D to 1200 A.D. During the excavation an oval-shaped mass (31x27x27mm) was found lying on the lower cervical vertebrae (C5-C7) underneath the mandible of a middle-aged female (Grave 30, cal AD 690 – 880).

This study compared the calcified mass found in Grave 30 from Petersplatz to one probable calcified thyroid tumour excavated at the post-medieval cemetery of Bartholomäus-Platz, Vienna and three anatomical specimens identified to be thyroid masses/goitres (PASW MN272, MN331, & MN334) from the pathological-anatomical collection at the Natural History Museum in Vienna (PASW). The analysis consists of 1) an anatomical macroscopic comparison and 2) a MicroCT cross-sectional comparison.

There were similarities in size, shape, and texture between the objects, with the Petersplatz mass being most similar to the object from Bartholomäus-Platz, MN272 (thyroid adenoma) and MN331 (goitre). MicroCT scans showed that the calcifications from Bartholomäus-Platz, Petersplatz, and MN331 had very similar exterior and internal structures. All three had one large chamber and a few smaller cavities with small fissures in the cross-section. From the analysis of the structure and location along with comparisons to other known thyroid masses, the Petersplatz mass is most likely to be a goitre or thyroid tumour.

B. EXPLORING A POSSIBLE METASTATIC CARCINOMA IDENTIFIED IN A HUMAN SKELETON OF 17TH-19TH CENTURIES, FROM IASI (ROMANIA)

Abstract author(s): Groza, Vasilica-Monica - Bejenaru, Luminița (Romanian Academy – Iasi Branch, “Olga Necrasov” Center of Anthropological Research; “Alexandru Ioan Cuza” University of Iasi, Faculty of Biology) - Bilavschi, George - Bacumenco-Pîrnău, Ludmila (Romanian Academy – Iasi Branch, Institute of Archaeology; “Alexandru Ioan Cuza” University of Iasi, Faculty of Biology) - Popovici, Mariana - Ciorpac-Petraru, Ozana-Maria (Romanian Academy – Iasi Branch, “Olga Necrasov” Center of Anthropological Research; “Alexandru Ioan Cuza” University of Iasi, Faculty of Biology)

Abstract format: Poster

In this study, a case with possible metastatic carcinoma is presented; it was identified in a sample of skeletons discovered in the area of the Turkish cemetery from Iasi (Romania) during 2019-2020 archaeological campaign. According to the discovered coins, the limits over time of necropolis use are set between the 17th and 19th centuries.

The skeleton is one of the preferential sites for metastatic expansion of different cancers. Bone response to metastatic tumours can be either osteolytic, or osteoblastic, or a combination of both. Due to the mechanism of metastasis formation, the number and size of lesions visible upon radiographic examination usually exceed the number of lesions visible at exterior; so, the radiographic exploration is an important key in the differential diagnostic of metastatic carcinoma. Single metastases are rare; in most cases, multiple lesions are present.

The case of a possible metastatic carcinoma, described in this study, was identified in the skeleton codified M190, belonging to a male aged 30-35 years. Several perforations/lesions were identified in the cranial bones (i.e., frontal, parietal, and maxillary bones), and postcranial bones (i.e., femur, tibia, clavicle, sternum, and sacrum). The macroscopic, stereomicroscopic, and imaging analyses (i.e., radiology and computed tomography) were followed by histological evaluation. For histological analysis, bone samples were cut using a Dremel 3000 variable speed multi-tool. Samples were cleaned in multiple sonic baths and embedded in Buehler Epothin 2 epoxy resin. The sections were ground and polished using carbide paper, and then visualized through a transmitted light microscope. The microscopic analysis revealed histologically new periosteal bone formations. The obtained results could indicate the metastatic carcinoma.

This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-III-P4-PCE-2021-1180, within PNCDI III.

C. RECONSTRUCTING THE SEASONALITY OF CATASTROPHIC EVENTS IN THE MEDIEVAL MASS GRAVES IN KUTNÁ HORA-SEDEC (CZECHIA, 14TH CENTURY) USING CEMENTOCHRONOLOGY

Abstract author(s): Zazvonilová, Eliška (Institute of Archaeology of the Czech Academy of Sciences; Department of Anthropology and Human Genetics, Faculty of Science, Charles University) - Brzobohatá, Hana - Frolík, Jan (Institute of Archaeology of the Czech Academy of Sciences) - Velemínský, Petr (Department of Anthropology, National Museum) - Brůžek, Jaroslav (Department of Anthropology and Human Genetics, Faculty of Science, Charles University)

Abstract format: Poster

Famine or epidemic periods were not exceptional in the Middle Ages in Europe. These catastrophic events are evidenced by the extreme changes in the funerary ritual (mass graves). This is also the case of medieval Kutná Hora-Sedlec (Czechia, 14th century), where 32 mass graves were excavated during rescue excavations. Their chronology is based on the stratigraphic configuration with two levels of pits. Based on historical documents mentioning a period of famine in 1318 and plague epidemics in 1348-1350, radiocarbon dating, and coins, the presence of mass graves can probably be linked to these catastrophic events. In this study, we aimed to understand better the differences between these two groups of mass graves, focusing on estimating the season-at-death of 42 individuals buried in them based on cementochronology. Given that famine and plague epidemics are strongly linked to the environment, socio-economic conditions, or climate changes and exhibit seasonal dynamics, the differences in seasonality may contribute to clarifying the causes of mass graves or the connection with documented historical events. Our results showed that each group of mass graves corresponds to one season (graves: A, B = spring/summer, graves: C, D, E = autumn/winter), hypothetically related to different seasonal peaks of mortality of famine and plague periods, supported by historical documents. This study was supported by Czech Science Foundation (21-09637S) and Ministry of Culture (DRKVO 019-2023/7.l.e. 0002327).

D. AN INTERDISCIPLINARY APPROACH TO ITALIAN MOBILITY DURING MIDDLE AGES (11-14TH CENTURIES). THE CASE OF THE CEMETERY OF SAN SISTO, PISA

Abstract author(s): Sagliuoccolo, Agnese - Cantini, Federico (Department of Civilizations and Forms of Knowledge University of Pisa) - Fornaciari, Antonio - Giuffra, Valentina (Department of Translational Research and New Technologies, University of Pisa)

Abstract format: Poster

Human mobility is both a fascinating and a challenging issue for the archaeologist.

In the Middle Ages, human mobility was such a relevant phenomenon that Jacques Le Goff defined the medieval man as “a perpetual pilgrim in a travelling Middle Ages”.

During the Late Middle Ages pilgrims, soldiers and merchants were typical and common travelers, but some individuals were also attracted by the emerging occupational stimuli from cities in full rebirth.

Among these cities Pisa certainly played a leading role, both for its bustling and early economic growth since the 11th century and for the Mediterranean expansion of its trade.

Can human mobility find a bioarchaeological feedback and explain the Pisan material culture between the 11th and 14th centuries?

In an attempt to answer this question, the church of San Sisto, with its cemetery, is an excellent case study. The church was founded in 1087 by the citizens of Pisa with the incomes of the victory over the Saracens of Al Mahdiya, a town near Tunis.

The excavation of the cemetery of San Sisto has currently involved about 150 tombs. One of these contains a particular grave good: the burial of the so-called “pilgrim”, a 35/45-year-old woman, who revealed a specimen of pecten jacobaeus on the chest.

In the last few years in Italy there have been several studies combining archaeological and archaeometric data, in particular through the analysis of isotopes useful for the reconstruction of human mobility (^{87}Sr and ^{18}O). However, these studies focus on the prehistoric and classical ages, and on the Lombard necropoles, but there is currently no research with this approach for the Late Middle Ages. The case study of San Sisto aims to be a first test for an integrated approach to the study of the Italian medieval mobility.

614 FOOD CULTURE(S) OF NEOLITHIC SOUTHEASTERN EUROPE: CULINARY TRADITIONS, CUISINE AND POTTERY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Lyemperaki, Marianna (Democritus University of Thrace) - Dzhafvezova, Tanya (St Cyril and St Methodius, University of Veliko Tarnovo)

Session format: Regular session

The interpretation of the past culinary traditions and cuisine – as a means for better understanding of the prehistoric societies, entails thorough examination of the utensils used for the preparation of food. The cooking pots, as a use category, offer a great deal of information not only on prehistoric diet and dietary preferences, but also on complex issues referring to the construction of social and cultural identity, the symbolic systems, the political relations and economies.

The morphological and technological characteristics of these vessels - indicative of the various cooking techniques applied for preparation of food, reveal specific aspects of the culinary practices, associated with the cultural and the social dimensions of food. The application of variable scientific analyses (organic residues, microbotanical studies, etc.) thus provides essential information on the actual components that comprised a meal, explored in the context of the social practices and the ways of consumption.

In this session we are interested in the cooking pots, as they played a crucial role in the preparation of food. How the analysis of cooking pots contributes to the study of the Neolithic social transformations, human mobility, the cultural dynamics and the expressions of identity? What contribution have the scientific approaches to the better understanding of the local culinary traditions? Can we trace similarities or differences among the cuisines of the Neolithic societies of southeastern Europe? And how other materials (botanical and zoological remains, tools such as millstones, etc.) found in association with the cooking pots, provide insights into the food choices of the Neolithic people?

The aim of this session is to bring together the variable data obtained from the examination of the cooking pots, and along with the study of other related materials, to explore their role for the better understanding of the Neolithic societies.

1 FOOD PREPARATION IN THE NEOLITHIC OF THE BALKANS: INSIGHTS FROM POTTERY

Abstract author(s): Vukovic, Jasna (Department of Archaeology, Faculty of Philosophy, University of Belgrade)

Abstract format: Oral

Food habits of prehistoric, especially Neolithic communities, are one of the most important fields of research. Functional analysis, namely use-alterations of Neolithic pottery in the Balkans are still rare. However, various food-related vessel classes were identified both in Early and Late Neolithic assemblages. These investigations were carried out based on analysis of use-alterations (accretions and attritions), vessel contours and morphology, and sizes, but also on performance properties (fabric and surface treatments). On the other hand, archaeobotanical and archaeozoological records recently became enriched with new data, little effort has been made to connect them with pottery. Analyses of organic residues were carried out on several assemblages, but with the main goal of identifying origin of lipids, not to reconstruct culinary practices or to establish correlation with specific vessel class. Additionally, spatial analyses in some cases revealed activity zones related to food processing and cooking. In this paper, all of these issues will be discussed, with emphasis on the role of pottery in food-related activities.

2 CULINARY TRADITIONS OF LATE NEOLITHIC NORTHERN GREECE: WHAT COOKING POTS CAN TELL US ABOUT THE FOOD CULTURE(S) OF THE AREA

Abstract author(s): Lymperaki, Marianna - Urem-Kotsou, Dushka (Department of History and Ethnology, Democritus University of Thrace) - Kotsos, Stavros (Ephorate of Antiquities of Thessaloniki, Hellenic Ministry of Culture & Sports) - Chondroyianni-Metoki, Areti (Ephorate of Antiquities of Kozani, Hellenic Ministry of Culture & Sports)

Abstract format: Oral

Pottery as a form of material culture directly related to the preparation and the consumption of food may be a powerful tool for understanding the extent to which food preparation and commensality contribute to social organisation. The examination of cooking pots, namely their shape and size, as well as the context in which they were used can provide information about the number of people who shared food, the type of cooked food and the social aspects of food preparation and consumption (e.g. private or communal level).

In this presentation we are going to present the final results of a study that focused on the cooking pots from two Late Neolithic sites in central and western regions of North Greece (Stavroupoli and Toumba Kremastis Koiladas respectively). The morphological and technological characteristics of these vessels along with the detailed analysis of their distribution on the sites have given us an insight on culinary traditions of the people in the area but also on their social and cultural identity. The organic residues and the microbotanical (starch and phytolith) analysis have also enriched our understanding of the local cuisines and provide further insight into the role of preparation and consumption of food in shaping local identities.

3 LONG-TERM STORAGE OF FOOD IN THE LATE NEOLITHIC DRENOVAC (CENTRAL SERBIA)

Abstract author(s): Bajcev, Olga - Obradovic, Djurdja (Institute of Archaeology, Belgrade)

Abstract format: Oral

Archaeological evidence from sites of the Late Neolithic Vinča culture (5400-4500 BC) in southeast Europe suggests that the autonomous household was the basic socio-economic unit. This is supported by the evidence of food storage, which is organized and controlled by households.

The aim of this paper is to examine the long-term storage of food in the Late Neolithic settlement at the site of Drenovac in Central Serbia. The topic will be investigated by combining archaeological and archaeobotanical evidence from recent excavations of three roughly contemporary burnt houses.

Burnt houses at Drenovac exhibit certain similarities in the organization of domestic space, but each one is unique in terms of quantity and variety of objects and tools, and their spatial distribution. The houses have usually two or three food preparation facilities located in different rooms and more than 50 ceramic vessels were found in each house. Some houses had an upper floor, which additionally complicates the matter of spatial analysis and reconstruction of allocated space for domestic activities. We will tackle the question of intra-household variability from the perspective of long-term storage.

Long-term storage of food in this Late Neolithic community is documented by the presence of large ceramic vessels – pithoi, which are mainly found inside houses. To provide an insight into storage practices we will examine: 1) the form, size, and capacity of pithoi, found inside three Late Neolithic houses; 2) their number and location in each house; 3) archaeobotanical evidence of food storage.

Using comparative analysis we will investigate the correlation between the size of the house and its storage capacity, and variations of the spatial distribution of pithoi between analysed houses. We will further discuss social and economic issues of household size and organization, as well as the social organization of food storage in this Late Neolithic community.

4 A PROTOCOL TO COMBINE THE EXTRACTION OF LIPIDS AND STARCH GRAINS FROM POTTERY VESSELS

Abstract author(s): Tarifa, Nadia - García-Granero, Juan José (IMF-CSIC)

Abstract format: Oral

Pottery played a fundamental role in the development of culinary practices and the transformation of food (e.g., soaking, boiling, etc.); it enabled the processing of a wide range of food products, as well as the mixing and preservation of ingredients. The microbotanical and biomolecular analyses of food-related artifacts provides remarkable insights into culinary practices. The analysis of organic residues associated with ancient pottery has been at the forefront of this field and it has been fundamental for identifying ingredients and understand combinations and processing. When combined with the typological analysis of cooking, storage and consumption pottery vessels, this information allows us to investigate past culinary pathways (i.e., the ways in which ingredients were transformed into meals). At present, starch grains and biomolecules are seldom analysed as part of the same study, and when analysed they come from different vessels, thus impeding an effective integration of the results. This is due to a) the very different expertise needed to recover and analyse these residues and b) the lack of specific laboratory protocols aimed at recovering both residues from a single sample and in a single procedure. Work combining interdisciplinary studies, such as microbotanical and chemical analysis, is uncommon, let alone work further integrating archaeological artefactual analysis. During this presentation we will discuss the flaws and strengths of a newly-developed laboratory protocol designed to extract starch grains and lipids from pottery vessels from a single sample and in a single procedure to disentangle the contents of these artefacts and document prehistoric culinary practices.

5 NEOLITHIC COOKING CERAMIC FABRICS: TECHNOLOGICAL CHARACTERISTICS, FUNCTIONAL PROPERTIES AND EVIDENCE OF USE

Abstract author(s): Dimoula, Anastasia (Eidikos Logariasmos Kondilion Erevnas A.P.TH, Aristotle Univ. of Thessaloniki) - Tsirtsoni, Zoi (UMR 7041-Archéologies et Sciences de l'Antiquité CNRS-Université de Paris I) - Valamoti, Soutana Maria (Eidikos Logariasmos Kondilion Erevnas A.P.TH, Aristotle Univ. of Thessaloniki)

Abstract format: Oral

Ceramic cooking fabrics, i.e. the clay recipes used in the production of cooking pots, are generally characterised by common functional attributes related to the intended use of cooking vessels over fire. On the other hand, their technological characteristics, from raw materials selection and processing to firing, vary significantly among sites and regions as well as over time. As for the evidence of use, research on this field has been very limited. In the scope of exploring this technological variability, along with establishing functional properties and detecting evidence of use on cooking pots, this presentation integrates macroscopic, analytical and experimental data, generated in the context of the ERC project PlantCult.

Methodology includes the integrated contextual, macroscopic and petrographic analysis of a spectrum of cooking pots sampled from four sites, dated from the Early-Middle to the Late-Final Neolithic/Chalcolithic (first half of 6th mill - end of 5th mill BC), located in northern Greece and Bulgaria. The study is complemented by the analysis of experimentally manufactured cooking pots, used in a series of cooking experiments. The results of our research demonstrate that cooking fabrics in our study area exhibit strikingly consistent functional properties, but are characterised by respective technological variability related to diverse factors, environmental and/or socioeconomic. Moreover, the comparison between analytical archaeological and experimental data paves the path towards identifying and interpreting evidence of use on ceramic cooking fabrics.

6 POTTERY FOR COOKING IN THE NEOLITHIC SETTLEMENT OF AVGI KASTORIA, NW GREECE. WARES AND FABRIC RECIPES

Abstract author(s): Saridaki, Niki - Papadias, Yannis - Katsikaridis, Nikos (Aristotle University of Thessaloniki) - Stratouli, Georgia (Ephorate of Antiquities of Kilkis)

Abstract format: Oral

The interest concerning cooking vessels and their morphological-technological characteristics remains at the center of archaeological research regarding prehistoric and historic societies along the Aegean region. Current state of research in cooking wares illustrates specific clay selection and potter's technology in their production tradition. Our research provides new information through the examination of the pottery assemblage from Neolithic Avgi in Kastoria.

The Neolithic settlement of Avgi Kastoria is located in NW Greece. The settlement is dated to the Late Neolithic (c. 5700 – 5400 cal BC), during which three distinct occupational phases were discerned based on the excavations results. There is an ongoing interdisciplinary research on the archaeological record of Avgi since 2008, part of which was the systematic study of pottery from the three main occupational phases of the site.

Our main objectives were to investigate the types of the pots, the raw materials choices and their technological features. Therefore, this paper implements morphological and technological characteristics of cooking vessels to discuss issues related to their production. The study revealed specific aspects of their manufacture regarding certain stages of the operational chain. For the above aims ceramic petrography accompanied with refring tests were chosen as the appropriate methods to supplement the macroscopic examination. The selected cooking sherds covers the pottery assemblages of all the phases of the settlement, as well as the different types of pots related to food preparation in order to investigate their production diachronically.

The preliminary results show specific choices in raw materials selection and particular processing of the clay paste that reflects a knowhow of making specific wares such as cooking pots. The result of the research helps us to understand better the cultural dynamics in the site and the choices of its inhabitants during the production of pottery and specifically the ubiquitous cooking vessels.

7 TINY BITES OF THE COOKING ARCHIVES: TOWARDS THE FOOD CULTURE(S) OF EARLY NEOLITHIC BULGARIA (FROM CERAMIC TECHNOLOGY PERSPECTIVE)

Abstract author(s): Dzhanezova, Tanya (St Cyril and St Methodius University of Veliko Tarnovo)

Abstract format: Oral

The paper explores those technological aspects of pottery manufacture, associated closely with certain ways of food preparation (cooking) and specific serving requirements. Particular attention is addressed to the technological group of the coarser cooking pots, as well as to the category of the finer and oftentimes decorated 'table ware'.

The identified variable clay pastes and the peculiar technical approaches are considered as a reflection of the specific ways of doing within the Neolithic communities in the focal area. Both the ceramic and the culinary traditions are seen as shaped by transferred knowledge – regarding the clay paste preparation recipes, as well as the ways of use of certain categories of vessels involved in the processes of preparation and consumption of food.

Considering the close links between the consumption practices and the expressions of social and cultural identity in certain communities, the technological and the cooking approaches are used as a proxy for the local culinary traditions amalgamated with the ceramic vessels production – as revealed by the pottery technology and use.

615 SOME LIKE IT HOT: COPPER AND BRONZE AGE SETTLEMENT PATTERNS AS RESPONSE TO CLIMATE CHANGE?

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Schaefer-Di Maida, Stefanie (Institute for Pre- and Protohistoric Archaeology, CAU Kiel; CRC 1266) - Dziegielewska, Karol (Institute of Archaeology, Jagiellonian University) - Raese, Hendrik (Institute for Pre- and Protohistoric Archaeology, CAU Kiel) - Schirmacher, Julien (Institute for Pre- and Protohistoric Archaeology, CAU Kiel; CRC 1266)

Session format: Regular session

In the Copper Age and until the end of the Bronze Age (ca. 4000-500 BCE), very different settlement patterns and dynamics can be observed in Europe. We can identify various settlement types ranging from farmsteads, hamlets or village-like structures up to fortified settlements and the so-called mega-sites in different regions at the same time. The developments of house layouts differ on a temporal scale and even within individual settlements, likely in response to economic activities, but possibly also by socio-political organizational structures. Additionally, for some regions we can recognise a connection between changes in house and settlement structures to climatic events. Yet, a more extensive evaluation of the interplay between different factors – particularly climatic events – on supra-regional and internal settlement patterns is missing. To deepen this discussion, we ask the following questions: How did people live together and organise themselves in the European Copper and Bronze Ages? Where, when, and how can we possibly identify particular settlement patterns, considering possible problems in determining contemporaneity? Is there a correlation between house or settlement structures and changing climatic conditions or are recognized patterns related to other factors like settlement size, site location, network integration, economy (e.g. subsistence strategies, metal production, etc.)? Are certain spatio-temporal differences detectable? Our focus is not limited to one area, but to the whole of Europe, in order to gather and discuss an overview of the research regarding these issues. With this session, we would like to bring together different studies on settlement structures and climate of the Copper and

Bronze Ages. Contributions are invited from archaeology (including its sub-disciplines) and climate science, as well as environmental science, ecology, and demographic studies.

ABSTRACTS

1 HYPOTHESES ON CLIMATE AND DEMOGRAPHIC DYNAMICS IN NEOLITHIC AND EARLY BRONZE AGE CENTRAL EUROPE

Abstract author(s): Großmann, Ralph (Kiel University)

Abstract format: Oral

It is clear that environmental hazards recurred throughout the Holocene. Episodes of increased socio-environmental stress combined with resource scarcity are likely to have promoted demographic collapses and possibly triggered migrations.

Here, we test hypotheses on socio-environmental dynamics from a European perspective and present results on the impact of climate and environmental hazards on past societies. Furthermore, we investigate to what extent socio-environmental transformations had an impact on the settlement systems of the prehistoric societies in question.

Specifically, this project aims to calculate and compare demographic trends based on ¹⁴C summed probability distributions (SPDs) for three Central European regions with a high concentration of archaeological sites and radiocarbon dates, which serve as a proxy for demographic trends. The study regions include: The Circumharz region, the Northern Alpine foothills, and the Czech Republic/Lower Austria. We focus our research on the Neolithic and Early Bronze Age (5500-3500 calBP).

The comparison of these regions allows us to identify different demographic dynamics, which were probably accompanied by migrations and transformations in social inequality and settlement systems. In addition, the demographic results are correlated with regional climate data in order to assess the impact of environmental hazards, in particular climatic bond events.

The results show that demographic “booms” in one region were accompanied by “busts” in neighboring regions, raising the possibility that regions prospered at the expense of their neighbors or that population shifted from one region to another. In addition, the results show statistical correlations between population fluctuations and hydroclimatic patterns. Thus, climate was at least partially responsible for demographic trends and changes in settlement systems.

2 ENVIRONMENTAL AND SOCIETAL DEVELOPMENTS IN WESTERN EUROPE IN THE 4TH AND 2ND MILLENNIUM BC

Abstract author(s): Weinelt, Mara (Graduate School Human Development in Landscapes CAU Kiel; Institute of Pre and Protohistoric Archaeology, Kiel University) - Schirrmacher, Julien (Institute of Pre and Protohistoric Archaeology, Kiel University)

Abstract format: Oral

Exploring patterns of socio-environmental change on deep historical time scales increasingly contributes to the current climate & socio-environmental impact debate. In particular, this perspective can help to narrow down the large uncertainties inherent to predicted global change scenarios, and to identify and to assess adequate and more sustainable mitigation strategies. Such efforts require an intense debate among paleo-environmental experts & archaeologists and a robust database to empirically test hypotheses of socio-environmental interaction.

Here we present an empirical approach based on a supra-regional comparison of past human and climate dynamics, covering the mid-Holocene period and spanning major late Neolithic and Bronze Age transformations. Our analyses build on an extensive dataset of radiocarbon data from archaeological contexts serving as a proxy for past human activities. The palaeo-climatological dataset comprises centennially-resolved temperature and precipitation changes.

This synoptic approach enables us to reconstruct the magnitude and rate of climate changes and of the intensity of human activities and/or changes in population density, and to assess external environmental vs endogenous societal triggers determining regional boom and bust patterns. On a regional scale socio-environmental developments are discussed for the Iberian Peninsula and Germany with a focus on people’s responses to rapid climate change and enhanced socio-environmental stress; to tentatively identify strategies which made people resilient to successfully deal with climate and environmental hazards.

Temperature time series reveal that after the Mid Holocene Thermal Maximum the 41st century BP was the coldest century in Western Europe. A sequence of spatial reconstructions reveals under typical NAO climate variability a complex mosaic where boom and bust regions coexisted next to each other. Along with the escalating 4.2 climate crisis the demographic patterns converge, suggesting a widespread population decline. 200 years later a recovery to the mosaic pattern is observed.

3 THE 4TH MILLENNIUM BC ON THE WESTERN BLACK SEA COAST AND THE SUBMERGED SETTLEMENTS AT ROPOTAMO AND SOZOPOL

Abstract author(s): Georgiev, Pavel (Centre for Underwater Archaeology, Ministry of Culture, Bulgaria; Centre for Maritime Archaeology, University of Southampton)

Abstract format: Oral

The 4th millennium B.C. on the Balkan peninsula is a period of great change, a transition from the Late Chalcolithic to the Early Bronze Age cultures with a gap in the C14 dates of several hundreds of years. The archaeological records of those two cultures differ drastically from one another. By the end of the LCA, there is evidence of a very complex social structure the population of which relied mostly on agriculture with a vast network of connections and trade that spread from the Aegean to Central Europe as well as advanced metalworking and craftsmanship. In comparison, the EBA can not be more different, flat isolated settlements with predominant stock-breeding traditions and a more mobile way of living.

Ever since the gap was identified there have been debates among scholars on the reasons for this drastic change in the way of prehistoric life. The most predominant being attributed to climate change and fluctuations of the sea level.

With this archaeological background comes the rationale behind this research. That is to enrich our understanding of this Transitional Period on the Balkan peninsula by looking into the submerged Early Bronze Age settlements at Ropotamo and Sozopol. To better understand their nature, are they coastal settlements or pile dwellings and how did their inhabitants react to the changes in the surrounding environment by the end of the 4th mill. BC? The aim is to gather qualitative and quantitative data from submerged prehistoric sites that will give an irrefutable answer to that question. It will be done through underwater excavations with very high-resolution documentation and interdisciplinary research. The results of this will be combined into a complete image of the past.

4 CLIMATE CHANGE RESILIENCE AND VULNERABILITIES OF WATERFRONT COMMUNITIES IN THE CIRCUM-ALPINE REGION (4000-800 BCE)

Abstract author(s): Heitz, Caroline (University of Bern, Institute for Archaeological Sciences; University of Bern, Oeschger Center for Climate Change Research)

Abstract format: Oral

Exploring how communities coped with climate change is crucial for a deeper understanding of vulnerability and resilience in the past and present. In this paper responses to climate change effects on waterfront settlements during the Neolithic and Bronze Age in the Circum-Alpine space will be examined using high temporal resolution data from the UNESCO World Heritage pile dwellings. Rising lake levels repeatedly rendered former lakeshore settlement areas uninhabitable and led to temporary interruptions of local settlement activities. To critically assess the narrative of the causal influence of climatic variability, archaeological information on settlement features as well as various global and regional paleoclimatic proxy data will be correlated utilizing qualitative methods and inferential statistics. First results show that Late Neolithic settlements were resistant to seasonal flooding but vulnerable to longer-term lake level rises of higher magnitudes. Settlement communities as such, however, were resilient to both, as spatial mobility and translocal socio-spatial configurations were an inherent part of their way of life. For the Bronze Age, however, these interrelationships are still poorly understood and hold great potential for future research.

5 SEARCHING FOR THE IMPACT OF 2.6-2.8 KA BP COOL EVENT ON EARLY IRON AGE SETTLEMENT PATTERNS IN THE POLISH PLAIN

Abstract author(s): Dziegielewska, Karol (Uniwersytet Jagiellonski)

Abstract format: Oral

The abrupt climate change at 2.6-2.8 ka BP (Bond event 2) had a variable and complex impact on the climate and environments of the Northern Hemisphere. In many regions of Eurasia, it is identified as the main trigger for fundamental settlement changes, such as the disruption of lake dwellings-settlements, and the intensification of nomadic activity on the steppes. Such a relationship is not fully apparent in many areas of the Central European Plain, characterised by ecosystems with a high degree of flexibility, allowing a delayed response to changes. With the help of an analysis of several case studies from different regions of the Polish Plain and its surroundings, it can be suggested that the impact of this natural climatic event was not decisive in the short term. More difficult to assess is its contribution to the gradual reduction in settlement potential observed towards the end of the Early Iron Age.

6 CHANGE OR CONTINUITY IN SETTLEMENT STRATEGIES FROM THE NEOLITHIC TO THE EARLY BRONZE AGE IN THE SOUTHWESTERN BALTIC SEA REGION

Abstract author(s): Raese, Hendrik (Institute for Pre- and Protohistoric Archaeology, CAU Kiel) - Feeser, Ingo (Institute for Pre- and Protohistoric Archaeology, CAU Kiel; CRC 1266)

Abstract format: Oral

In recent decades, significant linear infrastructure developments, surveys and research projects have taken place in the southwestern region of the Baltic Sea and north-eastern Germany. These have expanded the archaeological record for the period between the 4th and mid-2nd millennium BCE. This allows the analysis of settlement locations and potentially changing site selection processes from the end of the Middle Neolithic to the Early Bronze Age by means of pre- or postdictive modelling based not only on environmental (soil type, slope, aspect, etc.) but also on socio-cultural variables (visibility, previous occupations, distance to interregional routes, etc.). By comparing the predicted settlement patterns with the observed differences in previously published and new data on palynological proxies, soil erosion and the distribution of macro-remains, a connection or even a response to signals of the palaeoclimate can be discussed. The inclusion of archaeological material culture in the form of aoristic analyses and the calculation of calibrated summed probability distributions of ¹⁴C-dates as proxies for demographic development opens the possibility of qualifying probable changes in settlement and subsistence strategy due to population pressure or climatic events. Overall, this should allow the identification of a potential change or continuation of human-environment interaction at the turning point from the Neolithic to the Early Bronze Age.

A. WASTE DISPOSAL PROCESSES AND LANDFILL MANAGEMENT IN LATE BRONZE AGE INNER PERIPHERY OF THE CENTRAL EUROPE: BŘEZNICE SETTLEMENT (SOUTH BOHEMIA)

Abstract author(s): Štastný, Ondřej - Šálková, Tereza (Institute of Archaeology, Faculty of Arts, University of South Bohemia in České Budějovice) - Budilová, Kristýna - Kovárník, Jaromír (Laboratory of Archaeobotany and Paleoecology, Faculty of Science, University of South Bohemia in České Budějovice) - Novák, Jan (Department of Botany, Faculty of Science, Charles University) - Pavelka, Jaroslav (Centre of Biology, Geosciences and Environmental Education, University of West Bohemia) - Strouhalová, Barbora (Department of Physical Geography and Geoecology, Faculty of Science, Charles University) - Vobejda, Libor (Institute of Archaeology, Faculty of Arts, University of South Bohemia in České Budějovice) - Kuna, Martin (Institute of Archaeology of the Czech Academy of Sciences) - Chvojka, Ondřej (Institute of Archaeology, Faculty of Arts, University of South Bohemia in České Budějovice)

Abstract format: Poster

Our study is focused on the reconstruction of the community economy in the context of the Late Bronze Age; understanding the processes that led to the filling of features and the waste management.

The settlement of Březnice is located on less fertile soils in higher altitude (ca 455 m a.s.l.). The microregion of Bechyň is one of the warmest areas in South Bohemia. In terms of humidity, this area is characterised as below average, not exceeding annual total precipitation of 600 mm. During the Late Bronze Age (1300–1000 BC) the climate in South Bohemia was rather stable and dry.

These research questions were addressed based on plant macroremains, charcoals, phytoliths, starch, micromorphology, phosphates and magnetic volume susceptibility. The results showed the waste character of features infills which reflect specific economy and habitats of single households. The composition of the archaeobotanical assemblages was not determined by the type of feature, similarities in the plant spectra could often be observed in the infill of features that were located close to each other.

The dependence of crop spectrum on the quality of soils, and on the altitude, has been demonstrated for the Březnice site. The summer crops were dominant (barely and millet), while winter crops were cultivated in many species, but smaller amount. The economy was probably adapted to shorter vegetation seasons with possible precipitation fluctuation.

Charred remains of firewood inside the assemblages contained a proportion of burnt oak structures. The remains of various parts of uncharred plants were detected by phytolith and starch analyses. Animal proteins detected the presence of livestock meat and dung. Anomalies in soil phosphate contained different amounts of organic matter. Magnetic susceptibility measurements showed that the features were backfilled in a one-time event. Sedimentological analysis showed that the infills of the different types of features were similar.

B. BOATPEOPLE OR RURAL SETTLERS? NEW ASPECTS OF BRONZE AGE LIVING IN NORTH-EASTERN GERMANY

Abstract author(s): Nessel, Bianka (Mainz University) - Rieth, Dominic (GDKE Rhineland-Palatinate)

Abstract format: Poster

For some years the settlement chamber around the Late Bronze Age settlement in Lanke, dist. Barnim, Germany has been investigated intensively. It is located on a plateau, which in prehistoric periods was surrounded at least by wetland, maybe even water. Several nearby lakes have islands with Late Bronze Age settlement traces. This choice of sites has both advantages and disadvantages in terms of settlement structure, organization, and permanence. The limited area of the island sites raises for example the question of whether grazing areas were located within the settlements or were located in other regions, which are at least several kilometres away. It also raises questions about the mobility of humans and animals, since some islands could only be reached by boat. We present an approach of exploratory water level modelling to reconstruct the settlement landscape. This allows completely new insights into the settlement organization of Bronze Age communities in this area. It seems to be a subsistence based on animal husbandry and farming, organized around a network of water-bound settlements. This organisation type is currently completely unknown for Bronze Age communities in this region.

616 EAA COMMUNITY FOR CLIMATE CHANGE AND HERITAGE (CCH) ROUNDTABLE

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Martens, Vibeke (NIKU - Norwegian Institute for Cultural Heritage Research) - Biehl, Peter (University of California) - Davies, Mairi (Historic Environment Scotland - HES)

Session format: Round table

How do we meet the changes in heritage preservation caused by climate change? On the path towards a net zero emission society, we need interdisciplinary research on responses of previous societies to environmental change to help us develop resilience, mitigation, and adaptation strategies for sustainable cultural heritage management. We have as background the statements on climate change and heritage released by the EAA 2021 (<https://www.e-a-a.org/2021Statement>), SACC 2021 (<https://www.jma.uni-kiel.de/en/research-projects/sacc/sacc-statement-2021.pdf>), and the SAA 2022 (Microsoft Word - SAA Statement on Climate Change and Cultural Heritage (windows.net)), which all point to different important aspects on how archaeology and archaeologists can contribute. We also look at recent research on green transition impacts on heritage preservation.

This seventh roundtable organized by the EAA Community for Climate Change and Heritage (CCH) builds on the success of the previous ones and hopes to focus further on: (1) globalisation, (2) adaptation, (3) sustainability, and (4) resilience.

We are inviting representatives of key archaeology associations as well as specialists in climate change and heritage research as a sounding board for the CCH activities. The roundtable session will provide an update on the work done in and by the community since the previous meeting and discuss next steps for the Community to grow and extend its network and activities to help adapt to a global climate crisis, find good solutions for adaptation and mitigation, and thus increase heritage and societal resilience.

618 ARCHAEOLOGIES OF RELIGION AND SYMBOLIC BEHAVIOUR: BUILDING USABLE DIGITAL DATABASES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Canlas, Gino Ruggiero (University of British Columbia) - Radchenko, Simon (University of Turin) - Walsh, Matthew (National Museum of Denmark) - Nol, Hagit (Goethe University Frankfurt)

Session format: Round table

The archaeology of religion is a broad discipline that investigates the materiality of embodied practices in a sphere of life that is deeply integrated with other dimensions of the human experience. The development of digital platforms provides entirely new theoretical and methodological affordances, and scholars have accordingly been developing novel, innovative approaches to sharing, analyzing and visualizing archeological data. Digital databases for religions as well as for other symbolic behaviours, however, are not yet as widespread as in other fields. The goals of such databases are to record the archeological traces of such beliefs and behaviours and to enable both individual analyses and broad syntheses of large amounts of data, which other approaches are not as well equipped to handle. This session explores the challenges inherent in designing such databases as well as coding their features, and invites scholars who have either designed archaeological digital databases or who are interested in discussing the challenges that come with them to a discussion concerning the problems involved in converting qualitative into quantitative data (particularly in

a field where data are never completely preserved), as well as the potential that databases have in bridging traditionally divided disciplinary boundaries.

620 ISOTOPES AND ARCHAEOLOGICAL THEORIES OF COMPLEXITY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Vika, Efrossini (BioArCh, Department of Archaeology, University of York) - Toso, Alice (Bonn Center for ArchaeoSciences - BoCAS, Institut für Archäologie und Kulturanthropologie, Rheinische Friedrich-Wilhelms-Universität) - Varalli, Alessandra (Cases research group, Universitat Pompeu Fabra)

Session format: Regular session

Prehistoric archaeology has vigorously embraced biomolecular techniques to investigate poorly understood social phenomena. Archaeological theories of complexity brought forward the idea of societies as non-equilibrium systems and enhanced opposing discussions on the causality of societal change. Exploring several approaches to understand the organisation of interdependence, archaeology encompassed systems theory, network analysis, small-world theories, providing attractive tools to visualise plausible scenarios of multi-scalar social interactions.

Similarly, isotopic studies have enriched archaeological understanding of significant processes in prehistory. The reconstruction of dietary diversity within and across social strata and the symbolism associated with eating shed light on the identity of prehistoric communities and their evolution across time. This is because consumption patterns - and the consequential supply strategies - are an expression of economic interaction, social competition, community-level decision making, collective food traditions, gendered eating behaviours, and regional agricultural practices. The application of isotope analyses strongly contributes to the direct investigation of dietary patterns, subsistence strategies, and food system complexity.

We invite contributions that use isotope analyses of traditional and less explored elements (i.e., C, N, S, Ca, Zn) measured from collagen, collagen amino acids, calculus, to break long-held stereotypes of past social constructs, highlight complex networks, demonstrate economic diversity, pinpoint lifeway disturbances, identify system failures, and provoke new conceptualisations of past social organisation and interaction.

ABSTRACTS

1 FOOD INEQUALITY IN BRONZE AGE AEGEAN: A VIEW FROM STABLE ISOTOPE STUDIES

Abstract author(s): Vika, Efrossini (University of York)

Abstract format: Oral

The concept of food inequality has taken on critical dimensions in recent years. The recent health crisis clearly demonstrated that wealth determines access to food. Therefore, providing equitable access to not only enough, but also nutritious food, has become one of the greatest challenges of modern societies. At the same time, it is recognized that pressures of the food system determine land use change, pollution, and climate change, when tons of food go to waste.

But how is the idea of food inequality relevant to the Bronze Age, and what does a new research framework like this offer to our current world? In prehistory, we are used to identifying risk, vulnerability, collapse. But there is no methodological suite to identify and quantify the parameters that create the above situations, although we frequently talk about grain shortage and failure of production.

The present talk reviews stable isotope paleodietary reconstructions for populations in the Bronze Age Aegean, to debate whether we have enough methodological tools to identify the indicators of food access, understand gender parameters in food insecurity, and use the privilege of observing within the long durée to understand the social stresses caused by this inequality by comparing and contrasting societal trajectories, in order to contextualise food inequality as a driver of past social complexity.

2 QUANTIFYING VARIATION IN ISOSPACE FOR ARCHAEOLOGICAL APPLICATIONS

Abstract author(s): Cheung, Christina (Department of Anthropology, Chinese University of Hong Kong) - Szpak, Paul (Department of Anthropology Trent University)

Abstract format: Oral

In recent years, the use of isotope analyses in archaeological research has grown exponentially. Additionally, the increasingly interdisciplinary nature of research has allowed us to borrow analytical tools from many other fields, greatly expanding our analytical capacity. Utilising more isotope systems has also facilitated answering a larger range of archaeological questions. One particularly important improvement is the significant decrease in analytical costs for isotopic analyses, enabling larger and larger sample sizes to be generated within a single study. With bigger data sets,

and a growing emphasis on “big data analysis”, new mathematical approaches are needed to help unleash the full potentials of such datasets. Archaeologists now realise there is a need to move away from using only summary statistics, and take advantage of newer analytical toolkits to help better interpret their data. Using simulated as well as actual archaeological datasets as examples, this study presents a number of metrics borrowed from ecology, and discusses the applicability of different quantitative methods in answering archaeological questions.

3 DIFFERENT CULTURES, SAME ECONOMIES? DIET RECONSTRUCTION OF THE ENEOLITHIC AND THE EARLY BRONZE AGE COMMUNITIES FROM SOUTH-EASTERN POLAND

Abstract author(s): Szczepanek, Anita (Institute of Archaeology and Ethnology Polish Academy of Sciences; Department of Anatomy Collegium Medicum Jagiellonian University) - Jarosz, Pawel (Institute of Archaeology and Ethnology Polish Academy of Sciences)

Abstract format: Oral

Conducted analyses of stable carbon and nitrogen isotopes comprise comparative study of Eneolithic and Early Bronze Age communities from south-eastern Poland. We concentrated on representatives of the Globular Amphora, Corded Ware and Mierzanowice cultures. Collagen extracted from bone samples was analysed, including human and animal remains. Results were presented against the background of the local environmental data obtained from plant macroremains dated to the Neolithic. The obtained values allowed the diet of the analysed people to be generally described as inland, based on C3 plants, and supplemented with varied quantities of animal products. A comparison of the mobile Corded Ware culture population with the data obtained for the Globular Amphora and Mierzanowice culture communities revealed a significant share of animal products in the Corded Ware culture diet, indicating subsistence strategies based on pastoralism. Moreover our study demonstrates the typical variation resulting from the age at death of buried individuals with a distinctive group of the youngest children. The differences between adult females and males are not clearly discernible, although for most of the males the obtained $\delta^{15}\text{N}$ values are slightly higher.

The presented investigations were financed by National Science Centre Poland, NCN 2015/19/B/HS3/02149 and NCN 2020/39/B/HS3/00454.

4 BUILDING COMPLEXITY: USING MULTI-PROXY BAYESIAN CHRONOLOGICAL MODELLING AND STABLE ISOTOPIC ANALYSIS TO EXAMINE EASTERN EURASIAN PASTORAL NOMADIC COMPLEXITY

Abstract author(s): Green, Emilie (University of Aberdeen)

Abstract format: Oral

In this paper, we present a novel approach to examining cultural complexity across the Eastern Eurasian Steppe, with a focus on Mongolia, through the construction of Bayesian chronologies alongside stable isotopes as proxies for diet, foddering, and environment. Presented here will be an extensive suite of new and published radiocarbon dates alongside stable isotope data for C/N and S isotopes from human and animal remains excavated from burial contexts across the Egiin Gol. Traditional chronological and economic models for Eastern Eurasian Pastoralist groups have often depicted a narrative of generalisation and homogeneity. In recent years an image is emerging of a mosaic of different cultural groups along differing chronological trajectories, utilising, and at times influencing, a diverse range of resources and environments available to them. We present a robust Bayesian chronology for north Mongolia that supplements current chronological frameworks, corroborates emerging narratives of increasing cultural complexity across Eurasian Prehistory (focusing here on the Bronze and Iron Ages), and demonstrably questions traditional narratives of homogeneity. This research adds to the growing body of data endeavouring to disentangle these narratives to reconstruct models for Eurasian Pastoralist groups that account for the vast and diverse environmental, climatic, political, and socio-cultural mechanisms responsible for chronological trajectories and cultural complexity.

5 COMPLEXITY OF THE LATE BRONZE AGE IN THE BERETTYÓ-KÖRÖS REGION (HUNGARY) IN THE LIGHT OF CARBON, NITROGEN AND STRONTIUM ISOTOPES

Abstract author(s): Szigeti, Anna (International Radiocarbon AMS Competence and Training Center - INTERACT, Institute for Nuclear Research, Debrecen; Déri Museum) - Hajdu, Tamás (Department of Biological Anthropology, Eötvös Loránd University) - Dani, János (Déri Museum; Department of Archaeology, University of Szeged) - Molnár, Erika (Department of Biological Anthropology, University of Szeged) - Horváth, Anikó (International Radiocarbon AMS Competence and Training Center- INTERACT), Institute for Nuclear Research, Debrecen) - Marcsik, Antónia (Department of Biological Anthropology, University of Szeged) - Márkus, Gábor (Archeodata 1998. Bt., Kiskunlacháza, Hungary) - Molnár, Mihály - Major, István (International Radiocarbon AMS Competence and Training Center - INTERACT, Institute for Nuclear Research, Debrecen)

Abstract format: Oral

From archaeological point of view, the analysed bone samples are related to the so called Hajdúbagos/Cehăluț ceramic style. As far as we know, it was formed around the end of the complex transition period of the Middle and Late Bronze Age (MBA/LBA transition; ~1500/1450 BC), with a strong influence of the MBA and Tumulus culture traditions. The group used to flourish in current North-Eastern Hungary and North-Western Romania until at least the LBA IIa (~1300-1200 BC). According to the contemporary archaeological concept the group migrated to the Northern part of the Hungarian territory in the LBA IIa, abandoning the southern part its distribution area in the Berettyó-Körös region.

This paper presents those few inhumation graves within the Hajdúbagos/Cehăluț context, where the incorporation of the biritual funeral traditions from the Tumulus culture might have been occurred. While the literature has generally associated cremation burials with the group, Hajdúbagos/Cehăluț cemeteries have barely been known in both the Hungarian and Romanian territory, so far. We also provide new AMS C-14 data from the complicated transition period of the Middle and LBA (~1600-1500/1450 BC) until the LBA IIa, focusing on the Berettyó-Körös region. The samples were measured for stable carbon ($\delta^{13}\text{C}$), nitrogen ($\delta^{15}\text{N}$) and strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) isotopes too, to obtain more information about the diet habits and mobility of people, since these data has been absent from the archaeological records so far.

The research was supported by the European Union and the State of Hungary, co-financed by the European Regional Development Fund (project of GINOP-2.3.4-15-2020-00007 "INTERACT"); by the grant of the Hungarian Research, Development and Innovation Office (proj no. FK128013), the Bolyai Scholarship of the Hungarian Academy of Sciences; and by the New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation Fund.

6 DIET AT THE HUNGARIAN CONQUEST PERIOD SITE OF KAROS-EPERJESSZÖG (10TH CENTURY CE) RECONSTRUCTED FROM STABLE CARBON AND NITROGEN ISOTOPE ANALYSES

Abstract author(s): Gugora, Ariana - Demény, Attila (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences) - Fóthi, Erzsébet (Institute of Archaeogenomics, Research Centre for the Humanities)

Abstract format: Oral

The Hungarian Conquest period (9th and 10th centuries CE) is the time when the first Hungarians settled in the Carpathian Basin. Several cemeteries from this period are found across Hungary, such as the 10th century CE Karos-Eperjesszög. Although previous stable isotopic studies have examined the diet of medieval Europeans (including Hungarians), here we present the first such research conducted on a Hungarian Conquest period population. Stable carbon and nitrogen isotope analyses were performed on dental enamel, dentin, and bone from 63 individuals to reconstruct their childhood (teeth) and adulthood or later childhood (bone) diet. The enamel apatite carbonate $\delta^{13}\text{C}$ values range from -17.1‰ to -6.7‰, with a mean of -9.9‰, and the dentin collagen $\delta^{13}\text{C}$ values range from -19.1‰ to -14.2‰, with a mean of -16.4‰. The dentin collagen $\delta^{15}\text{N}$ values range from 9.5‰ to 14.2‰ and have a mean of 11.9‰. The bone apatite carbonate $\delta^{13}\text{C}$ values range from -13.9‰ to -8.2‰, with an average of -10.6‰. The bone collagen $\delta^{13}\text{C}$ values range from -23.8‰ to -12.3‰, with an average of -16.8‰, while bone $\delta^{15}\text{N}$ values range from 9.6‰ to 14.9‰, with an average of 11.4‰. These data indicate that C3 plants were the primary plant type consumed by the population but that varying quantities of C4 plants were also part of the diet. These results support the archaeological evidence that C3 plants dominated C4 plants in (early) medieval Central Europe. The $\delta^{15}\text{N}$ values show that animal protein constituted a moderate proportion of the diets of the study population, however, this is lower than expected for a former nomadic people. The results of this research reveal new information about diet during a dynamic and formative time in Hungarian history.

'SPECIALISATION, STANDARDISATION AND DIVERSITY': RE-EXAMINING THE ROLE OF MASS PRODUCTION IN ARCHAEOLOGY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: de Groot, Beatrijs (School of History, Classics and Archaeology, University of Edinburgh) - Mentasana, Roberta (GRACPE-ARQUB, Dept. d'Història i Arqueologia, Facultat de Geografia i Història, Universitat de Barcelona)

Session format: Session with keynote presentation and discussion

Mass production allows for a set of behaviours viewed as distinctly modern, relating to the mass consumption and mass discard of material goods. Mass production has been considered as a force disrupting traditional modes of production and an agent of globalization marking the age of supermodernity (González-Ruibal 2014, 1). Despite its modern connotations, archaeologists have also utilised the term 'mass produced' in specific pre-modern cases to describe classes of abundant material goods.

In this session, we create a platform for debating characterisations of mass production across archaeological contexts and discussing its impact on past social practices and behaviours. A common assumption relating to mass production is that it corresponds to processes of standardisation and labour specialisation. However, studies into early forms of mass produced ceramics show that production frequency does not always lead to higher levels of standardisation (e.g. Fragnoli 2021). Furthermore, although current capitalist economics assumes a causal relationship between consumer demand and production intensity, the link between the abundance and availability of objects and their frequency of use remains underexplored in archaeology.

We welcome diverse approaches to the study of material culture interpreted as mass produced from across archaeological contexts as well as more general discussion papers on the topic of mass production in archaeology. Topics of interest include the relation between standardisation, labour specialisation and production intensification and the relation between changing consumption patterns and mass-production. With this, we aim to develop a critical understanding of the concept of mass production and its utility for describing past material phenomena.

- González-Ruibal, A. 2014, *Archaeology of the Contemporary Past*, in Claire Smith (Ed.): *Encyclopedia of Global Archaeology*, New York: Springer, 1683-1694
- Fragnoli, P. 2021, Re-assessing the notion(s) of craft standardization through diversity statistics: A pilot study on Late Chalcolithic pottery from Arslantepe in Eastern Anatolia, *Plos One* 16(1).

ABSTRACTS

1 A COKE IS A COKE

Abstract author(s): Graves-Brown, Paul (University of York)

Abstract format: Oral

Andy Warhol famously observed that „A Coke is a Coke and no amount of money can get you a better Coke than the one the bum on the corner is drinking.“ This tells us something rather striking about the democratising potential of mass production. In this paper I will explore this notion, particularly in relation to the work of Walter Benjamin, who, contrary to popular opinion, was not an opponent of „mechanical reproduction“. Whilst, as Marx observed, capitalist production does indeed alienate labour, there is a curious sense in which a consumer society, unintentionally, „levels the playing field“ for everyone, be s/he „the president“ or a „bum“. This is perhaps most striking where technological products need to be freely available to everyone in order to succeed, the internet being the most obvious example (others include the shipping container and UNIX based operating systems). Mass production requires mass participation which, potentially, creates a balance of power which is a continual state of flux.

2 IS "PERFORMANCE" EVERYTHING? EXPLORING THE CONCEPTS OF STANDARDS, TECHNOLOGICAL CHOICES, AND PERFORMANCE ON CERAMICS FOR SUGAR PRODUCTION FROM SICILY

Abstract author(s): Mentasana, Roberta - Buxeda i Garrigòs, Jaume - Madrid i Fernández, Marisol (Cultura Material i Arqueometria UB, ARQUB-GRACPE, Dept. d'Història i Arqueologia, Facultat de Geografia i Història, Universitat de Barcelona) - Hein, Anno - Kilikoglou, Vassilis (Institute of Nanoscience and Nanotechnology, N.C.S.R. „Demokritos“)

Abstract format: Oral

What influences craft production in the past, especially when it is aimed at industrial production? Is efficiency, in the modern most productive-less effort view, something considered by craftspeople during the design and manufacture

of the object? How can we assess it? In this paper, we explore these concepts by taking the case study of ceramics for sugar production, sugar pots, from Sicily, one of the main regions for sugar production in Western Europe in the 11th-16th centuries AD.

After the Islamic expansion, sugar production in Sicily had its peak in the 14-16th centuries having an important impact on the island, and on the western Mediterranean, social, cultural, and economic development. Often, the only archaeological evidence of this industry is the presence of sugar pots, used in the last phase of sugar production when the liquid syrup is left to crystallize. These specialized vessels require to be produced in high quantity and following specific technical requirements in terms of shape, volume, and thermal and mechanical features to absolve. Results on the sugar pots' morphological and technological profile aided by instrumental analysis (Petrography, SEM, XRF, XRD, mechanical and thermal stress test) have revealed different centers of sugar pots production on the island and specific choices in the design of the vessels and their properties while following a common manufacturing idea.

To take the study further, in this paper the technological profile reconstructed is considered together with the possible stresses that the vessels were subjected to aided by computer modelling (Finite Element Modeling). This allows the simulation of the performance of the vessels under different conditions and the discussion about whether the different choices adopted by the craftspeople had an impact on the performance of the vessels during use.

3 **"ALL THAT GLITTERS IS NOT GOLD" (OR SILVER) - MASS PRODUCTION OF IMPRESSIVE FITTINGS FOR HORSE HARNESSSES IN VIKING AGE DENMARK**

Abstract author(s): Jouttijarvi, Arne (Heimdal-archaeometry)

Abstract format: Oral

The presentation is based on a Equestrian burial dated to the 10th century, found in Fregerslev in Jutland, Denmark. But is connected with a number of other finds where the same type of mass-produced fittings occurs.

The approximately 800 fittings from the horse's harness seem to span a large variation in quality. Some are of a relatively well-known type of silver-decorated iron fittings, which are known from, among a number of other places, the equestrian grave from Grimstrup, and also from a supposed fitting for a casket found in Viborg. These fittings were found to be made by a kind of mass production, where the decorations that are most often made up of braid patterns have been prepared in advance, for later to be soldered to the iron plates. The fittings bear the impression of having been hastily produced, and often the decorations did not fit the fittings, and the excess was simply cut off with a knife. Nor was time sacrificed for a correct placement of the decorative elements in relation to each other.

Somewhat surprisingly, other fittings on the same harness appear to represent a significantly higher quality of craftsmanship, including a number of gold-plated copper alloy fittings. In these cases, it is both the manufacture of the fittings themselves and the decoration on them that has been examined.

From a number of finds, only the mass-produced fittings are known, while in a few other finds they are also supplemented with fittings of high quality. It has been debated whether the mass-produced mounts constituted a form of basic equipment, made in a central workshop, which was distributed by the local king or ruler to the warriors in his service, while the better fittings constituted a form of marking of a higher rank for some of the warriors.

4 **SPINNING WORLD OF THE SPINDLE WHORL: MASS-PRODUCTION OF AVAR PERIOD WHORLS AND THREADS?**

Abstract author(s): Seidl, Benedict (University of Vienna)

Abstract format: Oral

Spindle whorls represent an essential tool in the production of textiles, with enormous lengths of threads necessary in the lives of Early Medieval societies. Apart from the threads produced, what else can these tools themselves tell us and what did they represent? This contribution aims to explore the aspects of material, shape, decoration, and production of spindle whorls with the case study of the Avar period, which exhibits two rather simple types of whorls that are very specific to this period. One seems to have been mass-produced in a standardised, efficient manner, which interestingly has parallels in the woven textiles of this period as well. These standardised whorls show a stark contrast to isolated finds of whorls made of rarer materials, such as glass, Roman pottery sherds, or mountain crystal, begging the question of whether these tools represented status symbols. Subsequently, as threads were a product of high demand, whorls are found across many burials of this period, also in an unusually high proportion of male burials compared to other cultures and periods, which could show how thread production not so gender specific as one might think.

5 THE SCREMBY CUP: ROMAN METALLURGY CAST IN A NEW LIGHT?

Abstract author(s): Thompson, Lenore (University of Derby) - Crichton-Turley, Courtenay-Elle - Willmott, Hugh (The University of Sheffield)

Abstract format: Oral

Examination of an artefact can reveal details of its making that indicate processes of mass production, a practice that demonstrates specific societal goals and associated organisational decisions. Close material analysis, however, can reveal incongruities between production practices and the ultimate goals of the producers and consumers of these items, presenting a more complex story of social and technological choices. This paper explores the production and consumption of a cast bronze cup excavated from an Anglo-Saxon burial located in Scremby, Lincolnshire, UK, dated to the 6th century. The cup itself is thought to have been produced in the 2nd century, based on its likeness to a small corpus of Roman enamelled vessels found in the UK and continental Europe. The design of the cup reveals aspects of mass production, particularly in the open casting process used to create the separate bottom piece. This is seemingly at odds with the bespoke labour- and time-intensive practices requiring artisanal specialisation to craft the body of the vessel. Close analysis suggests that the cup was not used for food or drink, and instead arguments have been made that vessels such as this were akin to Roman souvenirs. The Scremby cup represents an artefact composed of a blend of mass and artisanal production techniques in one numerically limited object type, providing evidence of the complex human relationship with production strategies and concepts of value in the Roman period. The reuse of the cup in a Saxon funerary context also allows us to investigate how these relationships developed, and how conceptualisation of its use transformed through the centuries following its production.

6 CHANGING METHODS OF PRODUCTION, CHANGING TRADITIONS: LATE LA TÈNE POTTERY ON THE SHORE OF LAKE BALATON

Abstract author(s): Sörös, Franciska (Hungarian National Museum; Eötvös Loránd University)

Abstract format: Oral

During the 2nd and 1st centuries BCE, with the development of large open agglomerations and oppida, fundamental changes occurred not only in the settlement structure but also in the methods of production. With the emergence of production centers, craftsmen, who had partly preserved and partly developed on the material culture of the previous period, created more standardised forms of personal ornaments and pottery. This phenomenon can be explained by a greater specialisation of the division of labour, changing consumption patterns, and trade links. The constantly growing and more uniform material culture also changed the former relationship between users and objects, for example by alienating members of the community from certain forms of production.

Compared to earlier periods, Late La Tène pottery is characterised not only by changed production methods but also forms and decorations with regional differences. To illustrate this, this study will use archaeological material from the open site settlement of Zamárdi-Kútvölgyi-dűlő II and the nearby fortified settlement of Balatonföldvár. Close to a strategically important haven, the two sites are located on the southern shore of Lake Balaton, facing the Tihany oppidum on the northern shore.

The changes observed in Late La Tène pottery suggest a more structured production system that fundamentally transformed the previous social practices. As the methods grew more complex, the material culture became more uniform in nature. Although these transformations did not lead to a level on par with Roman mass production, they were a significant step towards it.

7 TECHNOLOGICAL INNOVATIONS AND MASS PRODUCTION: CONSIDERING THE SPREAD OF THE POTTER'S WHEEL

Abstract author(s): de Groot, Beatrijs (The University of Edinburgh)

Abstract format: Oral

Technological innovation – defined as any change in technology which has tangible and lasting effects on human practices (Spataro and Furholt 2020) – plays a significant role in influencing the drive towards mass production and mass consumption. However, contrary to modern suggestions that innovations determine consumption behaviour, insights from archaeology suggests that the link between innovations and socio-economic change is more nuanced. Examples from the study of the potter's wheel, for instance, demonstrate that in many cases, despite the potential of this technology for increasing efficiency in pottery production, its adoption does not correlate to the mass production of wheel-made ceramics.

Utilising the potter's wheel as a case study, this presentation critically examines the dynamics of technological change and innovation and economic shifts towards mass production. In particular, the research addresses the utility of Jevons Paradox for archaeological research into technology: the notion that an increase in the 'efficiency' of production leads to a rise in the demand for those products. Utilising examples from my work on the adoption of the potter's

wheel in Iron Age south-western Europe, as well as case-studies from other areas, this paper examines the diversity of contexts in which the technology was adopted and used. Addressing its use across different temporal scales seeks to offer insights into long-term trajectories towards mass production and the socio-economic contexts in which such forms of production and consumption emerged.

Ref.

- Spataro, M., and M. Furholt, 2020. Detecting and explaining technological innovation in prehistory. Leiden: Sidestone Press.

8 DECONSTRUCTING POTTERY SPECIALIZATION AND STANDARDIZATION PROCESSES DURING THE RECENT PREHISTORY AND PROTOHISTORY IN IBERIA: A SOCIAL APPROACH FROM TECHNOLOGY

Abstract author(s): Padilla Fernández, Juan Jesús (Universidad de Salamanca)

Abstract format: Oral

Specialization and standardization have been traditionally interpreted in archaeology from a linear perspective and as a key tool to progress. However, history and past societies cannot be understood from presentist conceptions connected with current economic ideas based on capital. A more aseptic study on the technology of pottery assemblages during recent prehistory and protohistory (Bronze and Iron Ages) of Iberia allows reconsidering the alleged secondary nature of maintenance activities and their domestic and social contexts, as well as the specialized nature of both these activities and the people in charge of carrying them out. Thus, this presentation intends to demonstrate two things: that more than two thousand years ago pottery specialization and standardization processes were not necessarily linked to mass production and that technological innovations would not be synonymous with technological advances but rather the effect of the imposition of new ways of conceiving the world and specific social changes.

9 CERAMIC MASS PRODUCTION AND THE EMERGENCE OF THE PHOENICIANS

Abstract author(s): Badreshany, Kamal (Durham) - Schmitt, Aaron (University Heidelberg) - Rummel, Michael (Freie Universität Berlin) - Walters, Benton (University of Bristol)

Abstract format: Oral

This paper discusses the results of the first integrated large-scale multi-disciplinary analysis of Iron Age II and III pottery (ca. 850-300 BC) from settlements in southern Lebanon, an area that forms the core of the Phoenician Homeland. The research presented is centred upon a large corpus of mass produced Phoenician ceramics of various types, including amphorae and table wares. Traditional typological investigations are combined with a focused archaeometric approach including a new quantitative method for the morphometric analysis of amphorae, thin-section petrography, geochemistry and organic residue analyses, that are aimed at gaining a more detailed understanding of the organization and the development of Phoenician economy and their interactions across the Mediterranean. Despite gradual, but marked typological changes, very little change in the fabrics of these vessels was noted over 400-years. The research, thus, demonstrates that the production of ceramics was highly organised, and was undertaken by long-lived, sustained and centralised modes. The foundation of new sites beginning around 850 BC and the development of a new large-scale mass-produced pottery industry coincides with great changes across the region, including the emergence of the world's first great imperial powers and the intensification of Phoenician expansion in the Mediterranean. The outcomes of this research provide new insights into socio-economic strategies adopted in the Phoenician homeland during this pivotal time.

10 SO MANY BOWLS...BUT IN WHICH SENSE? MESOPOTAMIAN COBA AND BEVELLED-RIM BOWLS AS EXPRESSIONS OF SERIAL AND MASS PRODUCTIONS

Abstract author(s): Baldi, Johnny (CNRS)

Abstract format: Oral

In the archaeological literature of pre- and protohistoric West Asia, the concept of mass production has played a key role as the pivot of a long-standing broadly consensual argument. This sort of clichéd postulate on the appearance of so-called social complexity put together repetitiveness of production, standardization of finished products, increasing craft specialization, and, at the same time as the outcome and the driving force of all these phenomena, the advent of urbanization and early states. This perspective associates mass production with serial production on a terminological level, without making any distinction on a conceptual, operational, or material-cultural basis. This paper aims to identify criteria to differentiate serial from mass productions by analysing various types of late prehistoric Mesopotamian ceramic containers, but especially Coba bowls from the 5th millennium and Bevelled-Rim Bowls (BRB) from the 4th millennium BCE. Based on data from recent and ongoing excavations in Syria, Iraqi Kurdistan, and Southern Iraq, the

purpose of characterizing serial and mass operational sequences is to show how these separate modes of production implied entirely different relationships – both in terms of rates and patterns – with the phenomena of standardization and specialization. Ultimately, the analysis of Coba and BRBOWls reveals different organizations of the production chains and stresses the multifaceted and articulated nature of complex manufacturing.

11 MAKING FOR THE MASSES? PRODUCTION AND CONSUMPTION OF PLAIN HANDLELESS CUPS IN EARLY BRONZE AGE PHAISTOS (CRETE)

Abstract author(s): Todaro, Simona (Catania University)

Abstract format: Oral

In Minoan archaeology the term plain handleless cup is used to indicate a distinctive type of small vessel, of hemispherical or conical shape, which appeared in south-central Crete in the late Early Bronze Age period (i.e., around 2300 BC) and spread in the rest of the island and in various extra-insular locations that were under Minoan control in the Late Bronze Age. Most research into this category of vessel has focused on the more ubiquitous later version, labelled conical cups, often excluding entirely the earlier types known from south-central Crete from consideration. From a southern Crete perspective, however, the conical cups of the second millennium BC cannot be regarded as a separate phenomenon from the plain handleless cups attested already there in the mid-third millennium BC. Recognition of this raises a series of questions. Why did plain handleless cups first appear in southern Crete, so much earlier than the rest of the island? How (and why) were they produced during the late third millennium? How were they used and in which aspects did this differ from their painted counterparts or from other types of handleless or handled cup? What lines of development can be traced between these earlier examples of plain handleless cup and the ‘conical cups’ of the second millennium BC?

This paper aims to address these questions by focusing on the find-contexts and mode of production of EBA plain handleless cups found in the ceremonial/palatial centre of Phaistos, and will argue that these cups were produced en masse with moulds by specialists and non-specialised potters to be used as ration-bowls in the context of work-feasts, i.e. as a means to manage collective labour in a manner that very closely recalls the use of ration-bowls of the redistributive political systems of the late Uruk culture.

657 THROUGH INFANCY AND BEYOND: BIOARCHAEOLOGICAL PERSPECTIVES OF CHILDHOOD IN THE PAST

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Hodson, Claire (University of Reading) - Dittmar, Jenna (University of Aberdeen) - Colombo, Antony (École Pratique des Hautes Études)

Session format: Regular session

Infancy, childhood, and adolescence are fundamental aspects within all our lives, representing unique periods of biological, social, and cultural growth and development. With critical understanding of the importance and impact that these integral periods have on our overall life-course, increasing numbers of bioarchaeological investigations into the experiences of these young individuals are being undertaken. Both social-cultural explorations of the interactions between non-adults, their mothers, and the social worlds and communities in which they develop have emerged, in addition to several innovative methodological advancements in skeletal analysis, such as new macroscopic methods for estimating pubertal stage, juvenile peptide sex estimation, and increasing numbers of isotopic analyses looking at dietary, weaning and health stress, as well as 3D and medical imaging to understand growth and pathological processes. Non-adult bioarchaeology is thus of sustained, contemporary importance. This session aims to highlight new interdisciplinary research focusing on these young lives, unbound by temporal or geographical constraints, drawing together researchers and projects to consider new advances in non-adult bioarchaeology.

1 INFANCY AND DEATH IN MEDIEVAL WALLONIA (BELGIUM): SOME BURIAL AND BIOLOGICAL ASPECTS

Abstract author(s): Laforest, Caroline (Royal Belgian Institute of National Sciences; PACEA, University of Bordeaux) - Théry, Marie - Henrard, Denis - Mora-Dieu, Guillaume (Wallonia Heritage Agency) - De Beusscher, Valentine (Recherches et Prospections Archéologiques asbl) - Ansieau, Cécile (Wallonia Heritage Agency) - Bétian, Eva (University of Clermont-Ferrand)

Abstract format: Oral

Recent discoveries in the cities of Liège and Mons have enabled the initiation of a new and interdisciplinary research project, still ongoing, regarding the funeral practices and bioarchaeology of babies during the Middle Ages (7th-mid 13th c.) in Wallonia; a place where investigations into the lives and roles of young children have been minimal. In Liège, the Notre-Dame-aux-Fonts church revealed the presence of about fifteen inhumations of young infants (from perinatal to 2-3 years) dated from the second half of the 7th century to the mid-10th century AD. These burials were grouped in a pit arranged against a gutter wall. On the contrary, ten infants tombs (from 7-months in utero to 2-3 years old) were scattered among the burials of adults and older children in Mons, in a cemetery at the feet of the Sainte-Waudru church. Two of these infants tombs are associated with adult burials, in the same grave. These tombs are equally dated from the second half of the 7th century to the end of the 9th century but also from the 11th to the 13th century. On both sites, the taphonomical analyses showed evidence of burial in individual coffins, with sometimes evidence of a shroud present. The age distribution shows the presence of individuals from 7 months in utero up to 2-3 years of age, but the demographic profile seems to reflect the early childhood risks more than the reality of neonatal mortality in pre-jennerian societies. Nevertheless, several individuals are characterized by shape abnormalities and bone alterations, attesting that they experienced different kinds of conditions during their short lives.

2 NEW KIDS IN TOWN - INVESTIGATING NON-ADULT SKELETAL REMAINS FROM THE 18TH CENTURY GARRISON HOSPITAL CEMETERY IN TALLINN, ESTONIA

Abstract author(s): Vilumets, Linda (University of Tartu, Faculty of Arts and Humanities, Institute of History and Archaeology)

Abstract format: Oral

The Great Northern War (1700–1721) was a military conflict between major political powers in the Baltic Sea region, which resulted in the emergence of the Russian Empire. During the war Tallinn fell under the Russian rule and the suburbs of the town became home to numerous garrison soldiers and their families. Very little is known about the lived experiences of these children who as a result also migrated to or were born in a foreign place. Archaeological rescue excavations have revealed that many of them died an untimely death and were buried at the Russian garrison hospital cemetery. The burial place was used from approximately 1715 to 1770s and provides a good opportunity to study the non-adult (0–17 years) skeletal remains (approximately 70) from a relatively short time period.

Previous research conducted on the non-adults of Tallinn who were buried at a regular suburban cemetery (16th to 18th century) has demonstrated the negative effects that the surrounding environment and dietary practices can have on children, including severely faltered growth (35%), respiratory infections (16%) and various metabolic diseases. Paleopathological and osteological analysis of soldier's children provides a chance to investigate the lives of this marginalized group previously invisible in historical records. Comparisons with other coeval populations reveal whether they suffered similar health insults as native juveniles and how did divergent cultural practices affect their wellbeing.

3 THE CHILDREN OF THE LAST HUNTER-GATHERERS' COMMUNITIES, NEW SKELETONS FROM CABEÇO DA AMOREIRA (PORTUGAL)

Abstract author(s): Coutinho Nogueira, Dany (CIAS - Research Centre for Anthropology and Health, University of Coimbra) - Godinho, Ricardo (ICArEHB - Interdisciplinary Center for Archaeology and the Evolution of Human Behavior, University of Algarve) - Ramos Gaspar, Rosa (CIAS - Research Centre for Anthropology and Health, University of Coimbra; Centro Hospitalar Universitário de Coimbra - CHUC) - Bicho, Nuno - Cascalheira, João - Gonçalves, Célia (ICArEHB - Interdisciplinary Center for Archaeology and the Evolution of Human Behavior, University of Algarve) - Umbelino, Cláudia (CIAS - Research Centre for Anthropology and Health, University of Coimbra; ICArEHB - Interdisciplinary Center for Archaeology and the Evolution of Human Behavior, University of Algarve)

Abstract format: Oral

Discovered 160 years ago, the 13 archaeological sites of Muge located in the Tagus Valley (Portugal) have delivered one of the most important collections of human remains dated to the Final Mesolithic in Western Europe, with estimates of up to 300 individuals having been recovered from these contexts. The individuals are buried under or within shellmiddens (a.k.a k kkenm dding or concheiros) whose weight and calcareous nature have led to numerous taphonomic alterations: fragmentation, deformations, and calcareous encrustations. Despite about 30% of the sample being composed by non-adults, studies focusing on immature individuals are scarce and limited to pathological cases.

One of the shellmounds, Cabeço da Amoreira has been subjected to numerous excavation campaigns which yielded nearly 40 individuals, with ages at death ranging from infancy to elderly adults. Since 2011, new excavations with modern techniques have been conducted and led to the discovery of 6 new skeletons, half of which are non-adults, including a nearly complete skeleton of an individual who died during the perinatal period. The thoroughness of the excavations made it possible to collect data on the burial practices of these children, highlighting some differences between them. Paleoimaging techniques were employed to determine the age at death of the individuals (based on dental development of erupted and unerupted teeth) and to analyse porosities of the skeletons in order to determine if they correspond to normal bone growth or pathologies. One of the burials was removed en bloc and CT-scanned allowing to virtually reconstruction the position of the skeleton. Thus, the analysis of their skeletal and dental remains, combining macroscopic and paleoimaging methodologies, brings new information on their biological identity, health status, the growth and development of the last hunter-gatherers of Western Europe.

4 MULTIPROXY STUDY OF AN "UNUSUAL" INFANT FROM ALORDA PARK (CALAFELL, CATALONIA, 6TH-2ND C. BC)

Abstract author(s): Lucas, Marta (Universitat de Barcelona) - Le Cabec, Adeline (Univ. Bordeaux, CNRS, Ministère de la Culture, PACEA, UMR 5199, F-33600) - Colombo, Antony (UMR 5199 PACEA, EPHE-PSL University) - Pruvost, Mélanie - de Belvalet, Harmony (Univ. Bordeaux, CNRS, Ministère de la Culture, PACEA, UMR 5199, F-33600) - Garot, Elsa (Univ. Bordeaux, CNRS, Ministère de la Culture, PACEA, UMR 5199, F-33600; Université de Bordeaux, UFR des Sciences Odontologiques) - Rack, Alexander (European Synchrotron Radiation Facility, Structure of Materials Group - ID19, CS 40220) - Asensio, David (Departament d'Hist ria i Arqueologia, Universitat de Barcelona - UB, Barcelona, Spain; Departament de Ci ncies de l'Antiguitat i de l'Edat Mitjana, Facultat de Filosofia i Lletres, Universitat Aut noma de Barcelona - UAB) - L pez-Onaindia, Diego (Univ. Bordeaux, CNRS, Ministère de la Culture, PACEA, UMR 5199, F-33600)

Abstract format: Oral

During the Iron Age, funerary culture in Western Europe is characterised by a combination of unique practices. Cremation necropolis is the most common funerary treatment, which cohabitated with exhibition of decapitated skulls, and perinate burials in urban contexts. Regarding the latter, many questions remain to be answered; were the perinate individuals buried within urban contexts deliberately selected as it is likely there are not enough to represent all of the individuals who would have likely died at this age.

The archaeological site of Alorda Park (Calafell, Catalonia) was occupied from the 6th to 2nd century BC. Three phases deeply remodelled the settlement that transformed it from a typical rounded plan settlement to a fortified and squared plan one. All these changes caused stratigraphic alterations thus, most of the excavated individuals (MNI=17) are only partially preserved. From them, only 7 have been exhumated in situ, six of them in the chieftain's house and belonging the last phase.

Here, we present a perinate, individual ALP'01 S.08, who presents several anatomical anomalies: cervical ribs and a supernumerary tooth germ fused to the germ of the left mandibular lateral deciduous incisor. This individual is analysed through a multidisciplinary approach to better understand the reasons of the specific funeral practice it underwent. Indeed, ALP'01 S.08 is very well preserved and was found under a paved street. An analysis of the double fused incisor germ using synchrotron microtomography (scan resolution: 3 m) and virtual histology techniques has shown an accentuated line compatible with the neonatal line, confirming that ALP'01 S.08 survived beyond birth. The

paleo-genetic analysis have allowed to determine the sex and a micro-CT (μ CT) scan analysis of the bones presenting paleopathological signs allows us to propose a complex differential diagnosis including syndromes with congenital, micro-nutrient deficiency or as the result of environmental factors affecting development.

5 EVIDENCE FOR SMALLPOX IN THE ARCHAEOLOGICAL RECORD: A CASE FROM 7TH CENTURY HAYTON, YORKSHIRE

Abstract author(s): Crawford, Rosie (University of Cambridge; Cranfield University) - Hodson, Claire (University of Reading) - Errickson, Dave (Cranfield University)

Abstract format: Oral

Smallpox, caused by the variola virus (VARV), is estimated to have infected humans for around 2000 years. The disease is generally recognisable from its characteristic pustular rash and accompanying fever, but significant involvement of the skeleton has also been documented. Known clinically as osteomyelitis variolosa, this skeletal involvement comprises a typical set and distribution of sequelae and is a complication estimated to occur in 2-20% of non-adults with VARV. Most notably is the bilateral involvement of the elbows and, in the short-term, inflammation of the long bone metaphyses and destructive remodelling of the joint surfaces and surrounding bones. Whilst osteomyelitis variolosa appears only to begin developing in non-adult individuals, the condition can further progress to its classic 'late manifestations', which continue to be present for life; these include degenerative arthritis, flail joints, ankylosis, and stunted growth.

Currently, only six cases of archaeological osteomyelitis variolosa have been published, dating from the 10th - 19th centuries CE. These cases exhibit a mixture of the expected shorter- and longer-term osteological sequelae of smallpox, and comprise of five non-adult individuals, and one young adult. Here we put forward a potential seventh case.

Following a thorough review of the published clinical, palaeopathological, and archaeological literature on smallpox bone involvement since the 19th century, this study undertook the skeletal reassessment of a 7th century non-adult individual from a multi-phase archaeological site in Yorkshire. Both macroscopic, visual assessment and micro-CT imaging were used, and a multitude of pathological skeletal changes across the skeleton were recorded, consistent in type and distribution with the longer-term manifestations of osteomyelitis variolosa. Consequently, this research presents the oldest known case of osteomyelitis variolosa worldwide, and the earliest known physical evidence for the presence of smallpox in Britain.

6 RADIOGRAPHIC EVALUATION OF A 19TH CENTURY CASE OF RICKETS

Abstract author(s): Vicente, Lucia (Complutense University) - Ríos Frutos, Luis (Complutense University, Biodiversity, Ecology and Evolution Department)

Abstract format: Oral

The aim of this study is to analyze by means of radiography a sample of 84 long bones of children skeletons aged 0 to 6 years diagnosed with rickets. These cases came from the crypt of the Convento of Trinitarias Descalzas in Madrid, dated by documentary findings in the mid-nineteenth century. The radiographs were taken at the La Paz University Hospital (Madrid), and the iQ-LITE digital radiography viewer was used for visualization. In digital radiographs, several variables were taken from the paleopathological and clinical literature. The Line of Provisional Calcification (LPC) is the hypertrophic cartilage calcification. Radiographically it is observed in the growth plate as a radiopaque line. Thacher's radiographic scoring method is a 10-point score that assesses the degree of metaphyseal fraying and cupping and the mineralization of the growth plate. Both methods were used to evaluate the severity of rickets. Cases that show either radiolucent bands in the metaphyseal area or curvature in the diaphysis in individuals with no signs of active rickets could indicate previous episodes of rickets. In this study, a high frequency of severe radiological signs was observed (60% from LPC and 50% from Thacher), as well as the presence of past episodes of rickets (14%). We determined that there were significant differences in the signs of rickets between each long bone. For the interpretation of rickets, it is important to take into account the different growth rates of each segment of the arm and leg, which explains the diversity shown by the signs of this pathology on each bone. Digital radiographs assessed the severity of rickets, as well as signs of active healing, and signs of previous episodes of rickets. The contribution of radiographic evaluation for the study of rickets in paleopathology is discussed, as well as its contribution to the case of Trinitarias.

7 A CRADLE IN DEATH: COULD THE CONVENT OF SAINT DOMINGOS (LISBON, PORTUGAL) BE THE LARGEST NECROPOLIS OF NON-ADULTS EVER EXCAVATED?

Abstract author(s): Lourenço, Marina (University of Coimbra, Centre for Functional Ecology, Laboratory of Forensic Anthropology; Department of Life Sciences; University of Coimbra, Research Centre for Anthropology and Health; Department of Life Sciences; Era Arqueologia, S. A.) - Oliveira, Filipe - Calvo, Ever 3Era Arqueologia, S. A.) - Evangelista, Lucy (Era Arqueologia, S. A.; Interdisciplinary Center for Archaeology and Evolution of Human Behaviour)

Abstract format: Oral

In 2018, during rehabilitation works in the former convent of Saint Domingos, in the center of Lisbon, a large necropolis of non-adults was identified. It was located in the convent's cloister in an area of about 400m² and resulted from a short period of inhumations between 1755 (post-earthquake) and 1836.

We intend to present the results of the fieldwork that unearthed an osteological sample composed of approximately 2800 non-adults found in situ. A large number (~95%) died between the third trimester of gestational age to three years, with a very high percentage of perinatal deaths. Funerary practices show that the majority of individuals were buried in single graves, although a noteworthy number of collective graves were also identified. The space was abundantly reused, displaying an ample diversity of body depositions and orientations.

This necropolis is an exciting new finding, which stands out not only because of the large number of non-adults but also because of their overall good preservation and representativeness, and the restricted chronology associated, representing a meaningful opportunity to greatly enhance the knowledge about the growth, development, and health of non-adults in the recent past.

8 CHILD ABUSE AND NEGLECT IN ARCHAEOLOGY, WITH CASE STUDIES FROM MEDIEVAL AND POST MEDIEVAL SCOTLAND

Abstract author(s): Ashcroft, Elizabeth - Crozier, Rebecca (Department of Archaeology, University of Aberdeen) - Oxenham, Marc (School of Archaeology & Anthropology, Australian National University)

Abstract format: Oral

Child abuse and neglect remain under-explored (and perhaps avoided) in Archaeology, despite the recognition that a key determinant of any society is how we treat our children. Archaeologists find child abuse and neglect to be problematic topics because of the emotional sensitivity they provoke, and because of the complexity of the material evidence. To resolve these difficulties, a novel "jigsaw" model has been constructed which is an integrated, multidisciplinary, and child-centric investigation. The model is reproducible, applicable to individuals or groups of children from any Archaeological setting or time-period, and thus it permits comparative studies. The "jigsaw pieces" are the findings from investigations which extend beyond forensic or bioarchaeology to include burial archaeology, the archaeology of emotion, children's play, and the social and cultural context of the child's life in the past. The model leads to weighted, evidence-based conclusions about abuse and neglect, which are then open to broader archaeological interpretations. In this study thirty-five children's burial sites were identified across Scotland from the Medieval and Post-Medieval periods. The skeletal records of 2207 children were reviewed, with 443 being directly examined. Twenty-seven children (1.2%) were found to have skeletal trauma from a range of causes, and three further children had growth failure or stable isotope results leading to considerations of neglect. From the very substantial archives from St Nicholas Kirk, Aberdeen, two infants with skeletal trauma from abuse have been chosen as exemplars of the use of this novel "jigsaw model".

9 AN INTERDISCIPLINARY APPROACH TO THE STUDY OF CHILD ABUSE IN THE PAST: INTEGRATING METHODS FROM WITHIN AND BEYOND BIOARCHAEOLOGY

Abstract author(s): Marino, Roberta - Craig-Atkins, Elizabeth (Department of Archaeology, The University of Sheffield) - Millard, Chris (Department of History, The University of Sheffield)

Abstract format: Oral

Identifying evidence of child abuse in the bioarchaeological record has been the subject of debate. Past studies exhibited a lack of consistency in their approaches, leading to questions regarding the feasibility and potential of this area of research. To move forwards, it is crucial to critically explore the extent to which the evidence of the abuse of children in the past might be rendered more visible and its interpretation more reliable.

This paper will introduce a PhD project that investigates the methodological potential of a novel interdisciplinary approach that combines osteological and clinical evidence with radiological and bioengineering data and interprets these data within their historical, archaeological, psychological and socio-cultural context.

It takes a multi-scale sample approach, re-evaluating extant cases of suspected child abuse and examining a large medieval and post-medieval dataset (c.901-1900 AD; n=1074) using a novel protocol designed to identify instances of childhood skeletal trauma to discover new cases of abuse in the archaeological record.

Ongoing data collection revealed numerous instances of traumatic lesions. Preliminary data highlights how the application of knowledge from clinical/forensic sources is vital to accurately interpret non-adult skeletal trauma and how techniques developed within those fields can be highly complementary to osteological methods.

Thus far, 8 individuals have been selected for CT-based finite element (FE) analysis to investigate the mechanisms of long-bone fractures under a variety of loading conditions and thus evaluate the likelihood of inflicted injuries; 12 individuals have been chosen to test the potential of a high-resolution and non-destructive imaging technique (micro-CT) to achieve a more precise and accurate analysis of the degree of fracture healing.

These data will illuminate what can be learned from incorporating the various strands of evidence that can be brought to bear on the osteological data and allow for a critical evaluation of where the limitations lie.

10 **AN ANALYSIS OF THE LOCATIONS, ORIGINS, AND INFLUENCES BEHIND CILLÍNÍ (UNCONSECRATED CHILDREN'S BURIAL GROUNDS) IN COUNTIES FERMANAGH, MEATH, AND ANTRIM**

Abstract author(s): Mundt, Courtney (Queen's Univeristy Belfast)

Abstract format: Oral

Cillíní (unconsecrated children's burial grounds) were an unfortunate outcome of the Roman Catholic Church's Counter-Reformation (1545-1648 AD/CE). During the Counter-Reformation, the Church went back to and promoted their older theological teachings, including those of Saint Augustine of Hippo (354-430 AD/CE), who had proposed that unbaptised and stillborn children be refused burial in consecrated ground as they were still 'tainted' with Original Sin. Given no alternatives, the Irish began to bury their unbaptised and stillborn children close to or inside archaeological sites, and near anthropomorphic boundaries and prominent landscape features. Due to the complex emotions associated with the loss of a child carried by not just the families of the children but the community as well, the locations of many of these cillíní have faded out of memory, resulting in them being susceptible to agricultural and developmental destruction. With this in mind, it is the purpose of my doctoral dissertation to research and better understand the origins and locations of cillíní in the case study counties of Fermanagh, Meath, and Antrim. This was done by examining the current available map data and site documentation provided by Northern Ireland's Sites and Monuments Record (NI SMR) and the Republic of Ireland's National Monument Services (ROI NMS); researching the religious influences behind cillíní origins and locations; and performing oral history research fieldwork. This research has resulted in an increased number of recorded cillíní in the above counties; a better understanding of the Church's influences on the origins and locations of cillíní; and evidence of how cillíní oral traditions have survived in County Fermanagh. It is hoped that these results will continue the discussion of cillíní within Ireland and promote future research into these under-studied burial grounds.

11 **THE IMPACT OF THE ROMAN CONQUEST ON FOETAL, PERINATAL, INFANT, AND MATERNAL HEALTH IN BRITAIN**

Abstract author(s): Pitt, Rebecca - Lewis, Mary - Eckardt, Hella (University of Reading)

Abstract format: Oral

Recent bioarchaeological research highlights the importance of examining marginalised individuals to understand life within past societies, with a particular focus on foetal, perinatal, and infant skeletal remains. However, studies rarely examine these non-adults in comparison with the maternal population, often choosing to keep the world of non-adult and adult health separate. This presentation will compare the health of Iron Age and Roman non-adults aged up to 2.5 years (the first 1000 days after conception) (n=368) with women of childbearing age (20-45 years) (n=250) to observe how generations were impacted by the Roman conquest of Britain. Previous studies have suggested that the Roman conquest may have negatively impacted the lives of native Britons, yet comparisons with Iron Age populations have previously consisted of small datasets, raising the question of whether we are missing health stressors. Application of the Developmental Origins of Health and Disease (DOHaD) hypothesis alongside pioneering bioarchaeological methods to explore growth disruption and the obstetric hazards faced by women may develop an understanding of how the relationship between mother-infant was affected by the impact of changing socio-economic factors on the health of these individuals. Preliminary results suggest that health for both non-adults and adults worsened after the Roman conquest. In the non-adults, Iron Age individuals (n=46/174, 26.4%) showed less palaeopathological changes overall than both rural Roman (n=42/113, 37.2%) and urban Roman (n=41/81, 50.6%) populations. This pattern was also reflected in the adults, with Iron Age individuals (n=55/117, 47.0%) showing fewer pathological changes than the

rural Roman (n=40/65, 61.5%) and urban Roman (n=56/68, 82.6%) populations. Importantly, this suggests that the Roman conquest of Britain did have lasting, generational health effects on the population.

12 DISEASE, DIET, AND FALTERING GROWTH: INTERPRETING PRENATAL HEALTH IN THE LATE ANTIQUE TIBER VALLEY

Abstract author(s): Malis, Sierra (Smithsonian Institution, National Museum of Natural History; Department of Anthropology and Middle Eastern Cultures, Mississippi State University) - Wilson, Jordan (Department of Anthropology, The Pennsylvania State University) - Russo, Giuseppe - Lauteri, Marco - Chiocchini, Francesca - Ciolfi, Marco (Nation Research Council, Research Institute on Terrestrial Ecosystems) - Soranna, Gabriele (Independent Researcher) - Pickel, David (Department of Classics, Georgetown University) - Soren, David (School of Anthropology, University of Arizona)

Abstract format: Oral

Studies of juvenile growth and development in past populations have described the complex relationship between nutrition and infectious disease, especially among infants and children. In rural Roman Italy, diseases such as malaria, diarrheal infection, sepsis, and pneumonia interacted synergistically with undernutrition to increase morbidity and mortality, much as they do in present-day subsistence agricultural populations. The following research examines 60 fetuses, perinates, and infants from a Late Antique (5th cent. CE) agricultural community uncovered from the cemetery at Poggio Gramignano who were likely affected by an epidemic of *Plasmodium falciparum* malaria. Our study takes a syndemic approach to decoding the complex relationship between growth disruption, diet, and infectious disease. While previous research indicates the infants had increased indicators of physiological stress indicative of malnutrition or infectious disease, our study further reveals that mean skeletal age estimates were significantly lower than dental age estimates ($p < 0.001$), with 8 individuals (13%) showing evidence for growth disruption, along with a high incidence of pathological lesions. Although there is evidence of disrupted growth and increased indicators of physiological stress present among the infants, preliminary results of stable carbon and nitrogen isotope analysis of bone collagen suggest a variable and nutritionally rich diet. Specifically, mean $\delta^{13}\text{C}$ ($-21.1 \pm 0.7\text{‰}$) and $\delta^{15}\text{N}$ ($8.8 \pm 0.9\text{‰}$) values suggest that weaning and adult food consisted mainly of terrestrial resources such as C3 plants and terrestrial animals, following eating habits reconstructed from historical and archaeological sources from coeval sites. In light of this information, nutritional deficiencies alone cannot sufficiently explain the presence of physiological stressors and growth disruption among these infants. Thus, we consider how fetal and perinatal health was shaped by cultural factors alongside the complex interaction between diet and disease in this particular community and among its most environmentally sensitive members.

13 BREAST MILK AND SOLID FOOD - CHILDHOOD DIET IN THE NEOLITHIC. CASE STUDIES FROM THE POLGÁR REGION, HUNGARY

Abstract author(s): Somogyvári-Lajtár, Eniko (Institute of Archaeological Sciences, Eötvös Loránd University; Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences) - Pető, Ákos (Department of Nature Conservation & Landscape Ecology, Institute of Nature Conservation & Landscape Management, Szent István University Faculty of Agricultural & Environmental Sciences) - Gugora, Ariana (Institute for Geological and Geochemical Research, Research Centre for Astronomy and Earth Sciences) - Hajdu, Tamás (Department of Anthropology, Eötvös Loránd University) - Anders, Alexandra (Institute of Archaeological Sciences, Eötvös Loránd University)

Abstract format: Oral

Childcare is an important part of a community's everyday life. Breastfeeding, the process of weaning, and the dietary habits of non-adults are both a biological necessity and a socio-cultural phenomenon. In this paper, we shall use isotope chemistry to examine issues related to the nutrition and lifestyle of the non-adult members of the populations of two Middle and Late Neolithic (5500-4500 BCE) sites on the Great Hungarian Plain in eastern Hungary (Polgár-Ferenci-hát, Polgár-Csőszhalom). Last year (EAA 2022), we presented the preliminary results of this multi-year research project. This year, we can report on the final results. In the case of 71 child burials, we were able to examine the available archaeological, isotope chemistry, and anthropological data. We used five age group categories to analyse the results in as much detail as possible. We measured stable carbon and nitrogen isotope ratios on bone and tooth dentine collagen samples, and we measured stable carbon and oxygen isotope ratios on tooth enamel apatite samples to determine breastfeeding signals and weaning ages. We measured stable carbon and nitrogen isotope ratios on bone and tooth dentine collagen samples, and we measured stable carbon and oxygen isotope ratios on tooth enamel apatite samples to examine the general dietary habits. For the first time in Hungarian Neolithic research, we had the opportunity to examine children's dental calculus samples with micro-archaeobotanical methods, whereby we also obtained more information about the plant-based foods they had consumed. The present work is the first to systematically address the lifestyle of children in the Neolithic of the Carpathian Basin. The occupation of the two

sites spans roughly 1000 years, and thus we were able to observe both temporal and spatial changes. The project is funded by a grant from the National Research, Development and Innovation Fund (Grant K124326).

14 CHILDREN OF THE CITY: DIETARY DIFFERENCES BETWEEN BOYS, GIRLS, AND ADULTS IN A POST-MEDIEVAL URBAN ENVIRONMENT

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Abstract format: Oral

Diet and access to dietary resources form a fundamental aspect of culture and society. Differentiation in diet between individuals and demographic groups within an archaeological skeletal population can give unique insights into how that community was structured. This study analysed the diet of adults and non-adults from the post-medieval town of Aalst (Belgium) and its hinterland (n=444). For the current presentation, the focus is on the diet of lower-class non-adult individuals within the town. It combines the well-established bioarchaeological method of dietary stable isotope analysis (carbon ($\delta^{13}\text{C}$) and nitrogen ($\delta^{15}\text{N}$) from bone collagen with the novel peptide-based sex estimation from dental enamel (amelogenin X and Y). This multimethod dataset is used to study diet in the boys and girls aged 0 to ca. 18 years buried in a cemetery within the city (n=61). Results are analysed for sex and age differences in diet, and compared to dietary stable isotopes for adults and non-adults from five contemporary sites within and surrounding the city. The data show a clear difference in dietary protein intake between age groups, with a breastfeeding signal in infants and the 'poorest' diet in children in the age category 4-7 years at death. Adults from the same cemetery had a dietary isotopic signature indicative of more protein intake, and potentially more fish consumption, than the children. Interestingly, when compared to the overarching dataset, adult diet shows more inter-site variation whereas non-adult diet is relatively more stable between urban, rural, richer, and poorer burial locations. These results indicate a social differentiation in diet between adults and non-adults, with a societal age threshold which was on average close to the biological age of maturity. Thus, the current study highlights a fundamental difference in the lived experience of growing individuals as compared to adults within this post-medieval society.

15 BEYOND DIET: USING STABLE ISOTOPE ANALYSIS OF INCREMENTAL TISSUES TO STUDY GROWTH AND DEVELOPMENT

Abstract author(s): Feuillatre, Corinne - Beaumont, Julia - Batt, Catherine - Bryant, Eleanor (University of Bradford)

Abstract format: Oral

The stable isotope analysis of human remains has become an essential tool in palaeodietary reconstruction. Recent methodological developments based on the analysis of incrementally growing tissues like teeth allow the mapping of isotopic biographies of individuals. Based on the premise that the isotopic values of breastfed babies are one trophic level above that of their nursing mothers, studies of nitrogen and carbon stable isotope ratios ($\delta^{15}\text{N}$ and $\delta^{13}\text{C}$) of incremental dentine allow the identification of the start and completion of weaning. The ability of stable isotope techniques to reconstruct infant feeding practices in ancient populations makes them an ideal tool to uncover variations in infant feeding patterns both within and between populations rooted not only in subsistence and cultural practices, the sex or status of the baby, but also disasters like famines or pandemics. However, there are uncertainties surrounding the effect of physiological factors like stress and growth on isotope values in early life. Studies of contemporary babies for whom the diet, health and development are known are needed to examine changes in isotopic fractionation that may be specifically related to the physiology of the individual. In this presentation we share some preliminary results from case studies of mother/infant dyads combining anthropometric measurements, dietary and medical histories with longitudinal $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ data from hair and/or fingernails reflecting the period from the third gestational trimester through the first year of life. We investigate how both maternal and infant physiology and diet interact to shape the isotopic composition of the infant and explore how such new understandings of the physiological effect can inform the interpretation of archaeological isotopic data beyond the reconstruction of dietary inputs.

DIET, HEALTH, AND SOCIAL INEQUALITY IN INDUSTRIAL ENGLAND: A MOTHER-INFANT PERSPECTIVE

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Abstract format: Oral

The detrimental long-term health effects of physiological stress, in the first 1000 days of life have long been recognised, with the nutrition of mother and child being particularly crucial during this early developmental period. Historical literature has identified socioeconomic status as a significant causative factor in health, morbidity, and mortality during the industrial period in England. However, the effect of social status on maternal-infant diet and health is less clear, and bioarchaeological analysis offers the only means to directly observe this sensitive relationship.

This study proposes a nuanced approach to exploring the mother-infant nexus, utilising both palaeopathological and chemical methods to provide a comprehensive understanding of the status and nutritional health of both mother and child. Young non-adults (20 weeks gestation to 3 years postpartum) and adult females (22-46 years) from two industrial cemeteries were analysed: suburban St John's Redhill, Surrey (n=139) and urban St. James, London (n=460). Both populations provide a temporal resolution that spans the late 18th to 19th centuries, allowing the distinction of low and high-status individuals by their burial location. Non-specific stress (enamel defects, cribra orbitalia, growth disruption and VNC), metabolic disease (scurvy and rickets), and caries were recorded utilising macroscopic and radiographic standards, providing evidence for the impact of nutritional deficiencies in young non-adults and adult females. Future research will encompass, carbon and nitrogen stable isotope ratios of bulk bone and sequential dentine collagen, being used to reconstruct diet, weaning age, and nutritional status during gestation and early life.

Preliminary results indicate that scurvy prevalence was greatest in the St. James population, with 10.0% (15/151) of all young non-adults being affected, compared to 3.7% (3/83) in Redhill. A high rickets prevalence was observed in both the St. James (12.6%) and Redhill (13.2%) populations.

A BIOARCHAEOLOGICAL UNDERSTANDING OF THE LIVED EXPERIENCES OF CHILDREN DURING THE EARLY MEDIEVAL PERIOD IN SOUTHEAST ENGLAND

Abstract author(s): Bowers, Alexandra - Jones, Jennifer (University of Central Lancashire)

Abstract format: Oral

There is a distinct lack of bioarchaeological studies of children from early Anglo-Saxon Britain, despite it being a dynamic period of cultural transition, migration and change. Something unique was occurring in southeast England, reflecting a blend of burial practices incorporating both Romano-British and Scandinavian influences (as shown in recent DNA, isotope and grave good research on Anglo-Saxon sites, e.g. Gretzinger et al 2022; Leggett 2022). Key archaeological questions are not focused on how cultural change happened during the transition period, but rather how this phase of change affected the living, breathing people experiencing it. Periods of transition and change can greatly affect childhood health, as children are valuable conduits through which stresses in the population based on changing environmental conditions and resource availability, may be observed.

Anglo-Saxon sites typically contain c.19% of non-adult remains, meaning sites like Oakington (Cambridgeshire), which contains c.50% non-adult burials are vital insights into understanding child burial, identity and health. Through studying child remains it is possible to explore the extent to which mixing of Romano-British and Scandinavian peoples in the early Anglo-Saxon period had an effect on population health, and the impact of the migrant experience on childhood. This research uses 65 non-adults (aged 0-18yrs) from the 5-6th century Oakington burial site to investigate childhood health during this significant transformation. Initial findings show that children buried at the site displayed enamel hypoplasia (c.10%) and cribra orbitalia (c.25%) mainly occurring in the age range of 1-10yrs, providing evidence for childhood stress at time of death. These pathologies are expressed past newborn ages, meaning it is not an effect of risks associated with childbirth and newborn vulnerability. Therefore, they may be reflective of environmental stresses the children experienced during growth, providing an argument for migration and cultural transition being a stressful period in their lives.

EXPLORING THE EFFECT OF PHYSIOLOGICAL STRESS ON GROWTH DISRUPTION IN FOETAL AND INFANT INDIVIDUALS OF KNOWN AGE-AT-DEATH FROM SANTIAGO, CHILE

Abstract author(s): Meza-Escobar, Ofelia - Craig-Atkins, Lizzy (University of Sheffield)

Abstract format: Oral

Foetal and early post-natal life stages are highly critical periods of rapid growth, when physiological assaults to the growing body might translate into skeletally visible stress markers. Archaeologically recovered skeletal remains of foetal and infant individuals of known chronological age (CA) offer the unique opportunity to evaluate the accuracy

of the methods used in bioarchaeology to estimate age, while also allowing us to better understand the impact physiological stress can have on growth disruption throughout the earliest stages of the life course.

This study assessed 47 individuals between 32 gestational weeks and 1 year of age-at-death excavated from the Santiago General Cemetery, Santiago, Chile. We compared CA and physiological age (dental development and skeletal growth) to evaluate the accuracy of current methods on a South American population, and then analysed the relationship between CA, growth disruption and physiological stress to explore exposure to environmental stressors in-utero and early life.

Results for age estimation methods showed that dental age was the most accurate for this sample. Estimations given by femoral length underestimate CA, while estimates using pars basilaris dimensions randomly over and underestimate CA regardless of age group or sex. Correspondence analysis with symmetrical normalisation showed growth disruption in this sample is particularly associated with presence of cribra orbitalia and periosteal new bone formation.

Our results support the idea that growth disruption due to physiological stress affects growth and maturation and can bias age estimations made using dental and skeletal elements. The effects of physiological stress causing growth disruption are present both pre- and postnatally, indicating elevated maternal physiological stress in this population.

19 **A LOST WORLD: USING FRAILTY ASSESSMENTS TO ADVANCE OUR UNDERSTANDING OF PAST CHILDHOOD HEALTH**

Abstract author(s): Grimley, Isobel (University of Bradford) - Craig-Atkins, Elizabeth (University of Sheffield) - Koon, Hannah - Curtis-Summers, Shirley (University of Bradford)

Abstract format: Oral

In living individuals, frailty assessments are used to predict adverse health outcomes and aid in clinical decision-making. When applied to past populations, they can increase the temporal depth of our understanding of health determinants and advance discussions on the osteological paradox (Wood et al. 1992). Index-based methods, such as the 'Skeletal Frailty Index' (Marklein et al. 2016), provide a comparable yet comprehensive evaluation of an individual's morbidity risk. Children, however, are almost completely absent from this work despite their health being an important, sensitive indicator of environmental change and key for understanding population health. This research presents a developmental skeletal frailty index which accounts for non-adult biology and incorporates new avenues of research to assess frailty from children's remains, such as the use of delayed puberty as an indicator of physiological stress. The stage of puberty an individual was in at the time of their death can be identified osteologically and their age compared to a benchmark for each stage to identify delay. The potential to use delayed puberty in this index is supported by existing osteological data linking pubertal delay to increased frailty scores (Grimley and Craig-Atkins, in prep.). Further combining frailty results with primary and established carbon and nitrogen stable isotope data will enhance the contextualisation of the osteological findings and facilitate a richer interpretation of individual variation in diet, physiological stress and skeletal manifestations of frailty associated with dietary deficiencies. Developing these methodologies will enable bioarchaeologists to gain a better insight into the lived experiences of past children by using a multidisciplinary approach to assess their physical health and ensure the full breath of the life course is encapsulated by archaeological frailty research.

20 **CRAWLING TOWARDS A NEW METHOD FOR SKELETAL STRESS ASSESSMENT: DECIDUOUS DENTAL CORTISOL**

Abstract author(s): Quade, Leslie (Department of Anthropology, Faculty of Science, Masaryk University)

Abstract format: Oral

Maternal and prenatal stress levels influence health and wellbeing, and can also act as determinates of future health outcomes. Cortisol is a glucocorticoid hormone that plays important roles in foetal development and within the biological stress response. However, excess maternal cortisol stemming from psychosocial or physiological stressors can negatively impact the foetus. A previous pilot study identified the presence of cortisol in deciduous (primary) tooth dentine and enamel from both archaeological and living populations. Based on studies of permanent teeth and hair, it is hypothesized that cortisol is incorporated into dental structures during tissue development. As a result, deciduous dental cortisol (DDC) is likely to reflect cortisol exposure from the earliest periods of life, including prenatal stages. In this way, DDC could potentially act as a metric for maternal and prenatal health and stress states.

To explore DDC, 35 deciduous teeth from living individuals and archaeological contexts were analysed for cortisol concentrations via ELISA (enzyme-linked immunosorbent assay). The primary aim was to build upon the pilot study, increasing sample sizes and generating new data. Five individuals provided multiple teeth, permitting analysis of consistency in DDC in dentine and enamel from within the same person.

As with previous studies of deciduous and permanent tooth tissues, not all samples produced results that could be quantified within the assay. Dentine and enamel samples with detectable cortisol concentrations mostly came from

the same teeth and individuals, suggesting that cortisol exposure differs primarily at the individual level. Various factors may be affecting these results including the preservation of tooth tissues and the quantity of tissue available for analysis. With further research, DDC may represent an additional tool to explore the effects of maternal and early life stress exposure on health outcomes in past and living populations.

21 DENTAL PEPTIDES REVEAL THE SEX DISTRIBUTION OF EARLY CHILDHOOD PHYSIOLOGICAL STRESS EVENTS IN THE NEOLITHIC CAVE-NECROPOLIS OF ESCOURAL (PORTUGAL)

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Abstract format: Oral

To date, the Escoural cave-necropolis, mostly dated to the Late Neolithic, is the only one identified in the inner Alentejo (Montemor-o-Novo, Southern Portugal) which houses a large concentration of megaliths, but mainly with no preserved human remains. Inside the cave, human remains are commingled, so no systemic examination of the skeleton is possible to estimate sex, but this can now be achieved through proteomic analyses of the tooth enamel, owing to the sex-linked isoforms of amelogenin (AMELY and AMELX). Besides being less expensive and less affected by taphonomic factors than ancient DNA, enamel-bounded peptides preserve well and show a high reliability in sex-estimation. On the other hand, linear enamel hypoplasias (LEH) record infancy's non-specific physiological stress events, often caused by severe illness and/or nutritional deficiencies. These linear defects are detectable mostly in the anterior dentition. We combined these two datasets to analyse 36 lower left canines (with enamel mineralization occurring at 1.5-6.5 years) from the necropolis of the Escoural Cave, to assess sex distribution of physiological stresses during the first childhood. The Escoural collection presents an unbalanced sex ratio of 1:2 (males/females) which may have been culturally determined and a large number of LEH was observed in both sexes (67%). LEHs were more present in males (n=13; 69%) than females (n = 23; 65%) although the difference is not statistically significant (p=.85). Mean LEH frequencies were similar (p=.82) in males (n=1.44) and females (n=1.53) in individuals who presented LEH. The age onset of the first hypoplastic defect was similar (p=.23) in males (n=4; 4.20 yrs) and females (n=11; 3.74 yrs). We concluded that between sexes the occurrence of physiological stress events seems identical in terms of frequency and age onset. Based on peptide sex determinations, odontometrics allowed better sex allocation (81%) of the Escoural individuals than the mandible (53-67%).

22 ACUTE INFECTIONS AS A CAUSE OF DEATH: WHAT DO BONE SIGNS OF DEFICIENCY TELL US?

Abstract author(s): Colombo, Antony (Ecole Pratique des Hautes Etudes) - Belcastro, Maria Giovanna (University of Bologna)

Abstract format: Oral

During infancy, non-adults are highly susceptible to infectious diseases and deficiencies especially because of their immature immune system and their high demand for calories and nutrients due to their high growth rate. This partly explains the high mortality rate before the development of modern medical knowledge. It is well known in bioarchaeology through the osteological paradox that the absence of pathological bone lesions does not necessarily mean that a child died under healthy conditions and that the cause of the death is the disease diagnosed from the identified bone lesions.

For this paper, we focused on the 109 infants (52 females, 57 males) aged 0-3 years from the collection of identified skeletons curated at the University of Bologna (Italy). Most of them died between 1900 and 1909 with a registered cause of death. These infants were meticulously observed for bone signs of deficiency diseases.

49.5% of the infants observed had at least one bone sign that could be associated with a deficiency, but less than 4% of them were recorded as having died of a metabolic disease. On the contrary most of the individuals with signs of deficiency died of infection, especially intestinal infection, mainly in an acute form.

Deficiency diseases, even if not lethal – until a certain point –, result in the dysfunction of one or several metabolic cycles that can impact the immune system and maximize the risk of infection. A high prevalence of deficiency diseases in archeological populations could be considered an indicator of a high mortality from acute infection. Preservation of valuable osteological collections such as those from identified skeletons is essential to better understand the biases associated with the osteological paradox.

23 MORPHOLOGICAL PATTERNS OF LOWER LIMB FIBROUS ENTHESES IN JUVENILE SKELETONS

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Abstract format: Oral

Entheses (locations where tendons and ligaments attach to the bone) are acknowledged as skeletal markers, capable of revealing several biological and behavioral aspects of past individuals and populations. However, recording standards for Enteseal Changes (EC) have been developed so far only for adult individuals. As far as we know, EC of juveniles have not yet been studied with a systematic approach. Thus, this contribution aims at investigating the morphological changes occurring at the femoral insertion of the gluteus maximus muscle and at the tibial origin of the soleus muscle. In order to investigate a possible relationship between the morphological features of those entheses and skeletal maturity, a sample of 118 skeletons ranging from 0 to 30 years with known sex and age, belonging to the Identified Human Skeletal Collection of the Certosa Cemetery (Bologna, Italy), has been utilized. For this purpose, morphological variability has been subdivided into four discrete categories and a recording protocol for each entheses in the immature individuals has been developed. Young adults were included to observe the variation of the entheses with respect to the last stages of skeletal maturation and have been assessed using previous standardized methods. Bone and enteseal measurements and degree of epiphyseal fusion have been recorded. These features were analyzed in relation to sex, age and locomotor developmental patterns.

Negligible sexual differences have emerged for both the entheses. A close relationship between the morphological changes of both entheses and age have been statistically observed. For the gluteus maximus, a relationship between the morphological enteseal changes and locomotor milestones seems to be observed.

Our protocol should be usefully tested on other identified juvenile skeletal collections in order to better understand the relationship with growth and development. This could have a relevant applicative value both in forensic and archaeological fields.

24 AGE AT DEATH ESTIMATION FROM DIAPHYSEAL LENGTHS IN INDIVIDUALS FROM SECOND TRIMESTER OF GESTATION TO ONE MONTH POSTNATAL

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Abstract format: Oral

There are some specific studies for estimating the age at death in foetal individuals from diaphyseal lengths based on regression equations (Scheuer,1980,Sherwood,2000, Adalian,2002,Carneiro2013). However,these regression equations were developed following an inverse calibration model, which is preferred when the age distribution for the reference sample forms a reasonable prior for the target sample (Konigsberg,1980). The samples used consist of foetuses between 13 to 40 weeks of gestation, with a peak between 38 and 40 gestational ages. The most common effect of these methods is that they replicate the peak observed in the reference samples. There are several methodological approaches to avoid this, such as using a Bayesian procedure, using classical calibration models, or using reference samples with a wider age-at-death distribution.

This work aims is generate regression equations to predict age at death in perinatal individuals based on inverse and classical calibration using a reference sample with a wide age range.

Our sample comprises 71 individuals (39 males;29 females) from the second trimester of gestation to one year post-natal from the New Mexico CT database. Individuas with limb malformation, pathological, intrauterine restriction or prematurely born were excluded. Diaphyseal bone length of the humerus, radius, ulna, femur, tibia, and fibula was taken from sagittal images from CT using 3D Slicer. Both right and left bones were measured. Since we did not detect

statistically significant differences between the two sides, the left side was used. Intra and inter-observer errors in the measuring process were calculated in 10% of the sample, no statistical differences were found.

Age estimation models were made for each bone, for sexes combined, and for each sex separately. Our results show that the length of the femur provides the most accurate age estimation, being the standard error of estimate of 2,14 (GAw).

25 ANALYSIS OF THE RELATIONSHIP BETWEEN IMMATURE BONE SHAPE AND DIVERSE BIOLOGICAL AND POPULATION FACTORS USING 3D COMPUTATIONAL METHODOLOGIES

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Abstract format: Oral

Skeletal development is divisible into two different yet closely integrated processes: growth and maturity. Growth implies incremental growth in size, whereas maturity implies a highly specialized and organized adult status. Growth is an important factor in archaeological population studies since have been used as a good predictor of nutrition and health, however, maturity can also provide information about these issues.

Therefore, our study proposes to analyze maturity in the pectoral girdle and upper limb long bones to detect any age-related, population, and sex differences.

Our study was based on three-dimensional approaches such as three-dimensional geometric morphometrics (3D GM) and finite element analysis (FEA). The 3DGM is a potent and intuitive tool for analyzing statistical shape differences between individuals or groups. On the other hand, FEA is a method that reduces a complex geometry into a finite number of elements that allows getting information for biomechanical studies. Statistical processes as well as machine learning algorithms were trained using data from digital 3D models to find group differences.

These analyses were performed on two samples; the known sex and age collection from the National Museum of Natural History (Lisbon, Portugal) and the age-dental estimated archaeological collection of San Pablo from the Laboratory of Human Evolution at the University of Burgos, Spain. The total sample included; 87 scapulae, 153 clavicles, 102 humeri 101 ulnae, and 130 radii.

Our results show that shape changes are quantifiable and suitable for the establishment of age groups based on skeletal maturity. Therefore, a new method for estimating skeletal age can be established. The onset and fusion of the ossification centers, the biomechanics and variables such as sex or ancestry influence the skeletal maturity of these bones. The results obtained in this study could be useful to forensic anthropology, archeology, or paleoanthropology.

26 POPULATION VARIABILITY IN THE ASSOCIATION OF PUBERTY SKELETAL INDICATORS

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Abstract format: Oral

Sexual and social maturation is attained during puberty and adolescence, playing a main role through ontogeny. New skeletal methods evaluating cervical vertebrae maturation stages (CVM) and other puberty skeletal indicators (PSI) such as the ossification and fusion of the epiphyses of the long bones, the iliac crest, and the maturation of the hook of hamate, allow assessment of pubertal timing and menarche in archaeological populations[1,2]. However, the CVM has been found to show some disagreement with other puberty indicators[3]. Individual variation in the timing of puberty has been described in modern populations[4], but the association between CVM and other PSI among archaeological populations has not been tested. Thus, the aim of this study is to evaluate variation in the association between CVM and other PSI in some archaeological samples.

To do that, we have analyzed the stages of each pubertal indicator in two non-adult archaeological samples from Spain(n=83) and UK(n=24) ranging in age from 8 to 24 years. A Bayesian statistical approach was carried out to

evaluate if the association between CVM stages and other puberty indicators were more or less likely to occur among populations.

Our results show that in both samples the most diverse association is between CVM3 and 4 -transition and deceleration phases respectively- and the rest of puberty indicators, but especially with long bones fusion stages. Moreover, significant differences in the probabilities of the association between CVM and other PSI among populations indicate that the British sample is more likely to start fusion of the elbow at earlier CVM stages than the Spanish sample. Nevertheless, the Spanish sample shows greater probabilities in the association of earlier CVM stages and fusion of the distal radius and the iliac crest, displaying also a wider range of CVM stages regarding the ossification process of the hamate hook.

27 A MULTI-PROXY APPROACH TO THE STUDY OF THE PATTERN OF DEVELOPMENT IN PAST POPULATIONS

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Abstract format: Oral

Many bioarcheological studies are focused on the study of skeletal growth for understanding and interpreting past populations. Much of them concerns growth on length of the long bones. Generally, in these studies differences in size among individuals of different populations are attributed to the effect of illness or malnutrition on the growth pattern. In contrast, studies of appositional bone growth and those about differential growth of body segments (allometric growth) have been less frequent. However, allometric studies can reveal localized functional influences on the dynamics of bone growth and the study of appositional growth is crucial to understand adult bone structure and mechanical adaptation. Moreover, the development process consists of more than accumulative changes in size, but also in maturity. Maturity implies an increase in complexity and its assessment allows us to correctly interpret differences in size among individuals of the same age.

The main objective of this work is to perform a complete study of development in the archaeological collection from San Pablo (ss. XIV- XIX) housed in the Laboratory of Human Evolution at the University of Burgos integrating results from linear and appositional growth and maturity of different skeletal regions. To accomplish that, we study growth and maturity in three bones: clavicle, humerus and femur. In this way, we evaluate the growth and maturity of the shoulder and upper body, stature, body mass and the relationship among these different variables during growth. This study was performed in at least 50 non-adult individuals and 30 adult individuals aged from zero to 30 years old.

Our findings show differences in the tempo of growth and maturation both among bones and among the different part of the same bone. Some of the variables studied are more susceptible to the effect of environmental factors than others.

A. INFECTIOUS INFANT DEATH OF A NEWBORN FROM AN IRON AGE SPANISH ARCHAEOLOGICAL SITE

Abstract author(s): Cuesta-Aguirre, Daniel - Martirosyan, Ani - Sandoval-Ávila, Carolina - Jordana, Xavier - Malgosa, Assumpció - Santos, Cristina (Grup de Recerca en Antropologia Biològica; Departament de Biologia Animal, Biologia Vegetal i Ecologia; Universitat Autònoma de Barcelona)

Abstract format: Poster

Infant mortality in ancient communities is expected to be mainly a result of complications during birth, congenital anomalies, or infections. In this work we present a possible case of infant death by infection of a 2-month-old child buried in the Iron Age Iberian site of Vilars d'Arbeca (northeast Spain). Morphological evidences were combined with dental histology and paleogenetic analysis.

Morphological age determination, based on different methods, indicates that the individual died 36 to 63 days after birth. It presents major porosity in several skull bones, especially in the basilar portion, which is incompatible with skeletal development for that age. The dental histological analysis shows the presence of the neonatal line and a survival of 65 days after birth. Moreover, two stress lines appeared 18 and 8 days before death. The paleogenetic study indicates that the individual is a male. The microbiome analysis of the shotgun sequenced sample allows to detect signs of *Acinetobacter lwoffii* bacteria. *A. lwoffii* has been increasingly reported as a pathogen associated with infections like septicemia, pneumonia, meningitis, urinary tract infections, and gastroenteritis.

All the combined information suggested that an infection caused by *A. lwoffii* was probably the cause of the death of the individual.

B. FIRST RESULTS OF PUBERTAL TIMING FROM EARLY MEDIEVAL CENTRAL EUROPE

Abstract author(s): Klostermann, Paul (Department of Anthropology, Natural History Museum Vienna; Doctoral School of Ecology and Evolution, University of Vienna) - Berner, Margit - Pany-Kucera, Doris - Wilschke-Schrotta, Karin - Eggers, Sabine (Department of Anthropology, Natural History Museum Vienna) - Hofmanová, Zuzana (Max Planck Institute for Evolutionary Anthropology; Department of Archaeology and Museology, Masaryk University) - Wang, Ke (Max Planck Institute for Evolutionary Anthropology)

Abstract format: Poster

The bioarchaeology of adolescence emerged as an innovative field that investigates life history questions and related health and stress experience in the past. Herein, the new methodology of pubertal timing on dry bone is applied to skeletal remains from Central Europe and the Early Medieval Period for the first time. Human remains from the Avar Period site Mödling in Eastern Austria dating to the 7th to the 9th century AD were analysed for Puberty indicators in the dentition, the upper limbs, and the pelvis. In order to capture the whole range of adolescent development, approximately 200 individuals from the ages of 8-30 were included in the analysis. Chromosomal sex estimation via ancient DNA on all studied individuals allows for the observation of pubertal timing in the sexes separately (84 females, 117 males) while ensuring the high reliability of the results. The results of this study will bridge the published pubertal timing data from the Roman to the High Medieval period leading to a better understanding of pubertal development trends in the past. This research will also contribute to sex-specific development patterns in ancient groups and their impact on past social structures. This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement n° 856453 ERC-2019-SyG).

C. NON-ADULT HEALTH, DIET, AND BURIAL PRACTICES DURING THE ZHOU DYNASTY (1046-221 BCE) IN ZHOUYUAN (SHAANXI, NORTH-WEST CHINA)

Abstract author(s): Li, Ziyi (Department of Archaeology, Durham University) - Li, Nan (National Centre for Archaeology, China) - Gowland, Rebecca - Jakob, Tina (Department of Archaeology, Durham University)

Abstract format: Poster

The site of Zhouyuan, located in Shaanxi Province, north-west China, was the birthplace of the Zhou Dynasty. This poster aims to provide insights into the health, diet and burial practices of non-adult individuals by combining palaeopathological, stable isotope and archaeological evidence. A total of 39 individuals (aged from birth to 16 years) from two chronologically different periods of the Zhou Dynasty: the Western Zhou (Group 1, 1046-771 BCE, n=20), and Eastern Zhou periods (Group 2, 770-221 BCE, n=19) were included in this study. The palaeopathological analysis revealed that both groups had a low caries prevalence attesting to a diet low in complex carbohydrates. The frequency of non-specific stress indicators was also low, although this could mean that the children died before bone changes could occur. Carbon and nitrogen stable isotopic ratios from five of the Zhouyuan children and nine adults were compared. $\delta^{13}\text{C}$ values showed significant incorporation of C4 food for both non-adults and adults. In contrast, lower $\delta^{15}\text{N}$ values in non-adults indicated that these individuals had a different diet compared to adults. A decrease in $\delta^{15}\text{N}$ values between a 0-3-month-old and 1-2-year-old infant suggests dietary changes due to the weaning process. Funerary practices were also specific to life course stage: in both groups, younger children (0-5-years) were buried separately from older children and adults. In Group 1, the 0-5-year-olds were buried directly in earth-cut pits, covered with sherds, while in Group 2, their bodies were placed into urns. Furthermore, Group 1 showed an absence of 0-6-month-old infants. This shift in burial practices suggested changes in cultural and funerary perceptions towards children between the Western and Eastern Zhou periods. In conclusion, this study provides valuable insights into the health, diet, time of weaning, and funeral treatment accorded to the Zhouyuan non-adults.

FLOOR DEBATES. ANALYSIS AND INTERPRETATION OF ARCHAEOLOGICAL FLOORS AND OCCUPATION SURFACES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Alonso-Eguiluz, Mónica (MARI- Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel) - Lo Russo, Sarah (MARI- Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel; IPAS- Integrative Prehistory and Archaeological Science University of Basel) - Milek, Karen (Department of Archaeology, Durham University, United Kingdom)

Session format: Regular session

The identification and analysis of occupation surfaces in excavated buildings play a crucial role in the reconstruction and interpretation of social spaces of past societies, including living conditions, daily activities, and human-animal relations. The design, use, and choice of flooring materials and maintenance practices affect how a room is perceived, moved through, and experienced, not only visually, but also through touch, smell, and sound. From a wider perspective, the composition of occupation surfaces embeds critical information about past economic and social activities and the socially constructed concepts of 'dirty', 'clean', 'pure', and 'comfortable' – concepts that influence what is left behind on occupation surfaces and bias archaeological interpretations of activity areas. In recent years several advances have been made in scientific and theoretical approaches to the analysis and interpretation of archaeological floors and occupation surfaces, but more work needs to be done to integrate the method and the theory. The aim of this session is to build on recent developments, and to encourage dialogue and debate among archaeologists who analyze and interpret floors and occupation surfaces. We especially invite contributions on:

- Scientific methods applied to the identification and spatial analysis of different flooring materials, human and animal activity areas, and/or maintenance practices;
- How ethnoarchaeological, ethnohistoric, and/or experimental research can improve our understanding of how occupation surfaces can be analyzed and interpreted;
- How cultural and individual choices influence the use of flooring materials and maintenance practices;
- How different flooring materials and accumulations influence the perception of, movement through, and/or sensory experience of a room or area;
- The economic, social, and/or religious aspects of resourcing, preparing, applying, and maintaining flooring materials;
- The relationship(s) between flooring materials, maintenance practices, post-depositional processes, and artefact/ecofacts distributions on floors and occupation surfaces;
- The integration of interdisciplinary research on occupation surfaces and site activity areas.

ABSTRACTS

1 STONE TO SURFACE: EXPERIMENTAL LIME PRODUCTION AND THE ANALYSIS OF LATE BRONZE AGE PLASTER FLOORS AT KALAVASOS-AYIOS DHIMITRIOS, CYPRUS

Abstract author(s): Herrick, Hannah - Berna, Francesco (Simon Fraser University)

Abstract format: Oral

Multi-method geoarchaeological research conducted in association with the Kalavastos and Maroni Built Environments (KAMBE) project is focused on identifying the components and production process of lime plasters and mortars at the Late Bronze Age (LBA) regional site of Kalavastos-Ayios Dhimitrios (K-AD), Cyprus. Specifically, we aim to identify the natural lithic resources utilized in LBA lime production at K-AD, in order to understand the scale of lime production on-site and to better understand its environmental impact in LBA Cyprus as a whole. This paper discusses the results of laboratory-based experimental lime production conducted in 2023, using limestone, sandstone, and marl samples from the Kalavastos region. Using petrographic analysis and Fourier transform infrared microscopy (micro-FTIR), we compare samples of untreated stone, stone experimentally heated to a range of technology-specific temperatures (300°C - 1000°C), experimental lime, and archaeological lime plasters and mortars excavated at K-AD from 2015-2020. These results allow us to hypothesize the estimated temperature of lime production used in the making of these LBA floors, and therefore lay the groundwork for determining the energetic input and environmental impact of lime production technology in LBA Cyprus.

2 PAVING PROCESS OF THE BLACK AND WHITE MOSAICS IN HERCULANEUM

Abstract author(s): Lim, Yong Bing - Ogawa, Takuro - Hori, Yoshiki (Faculty of Human-Environment Studies, Kyushu University)

Abstract format: Oral

The black and white mosaics belong to a popular tradition within ancient Italy. Overall surfaces of mosaic, in white and black tesserae, became popular in the 1st century BC and remained in widespread use for domestic and commercial spaces down to the end of the 3rd century AD. In the rooms of the houses at Pompeii and Herculaneum which have simple patterns of large and small white squares separated by black rectangles, the black-and-white mosaics all use curvilinear motifs. It is generally agreed that small and simple figure compositions were set in separate fields of more or less equal importance within a basically geometric framework of black tesserae, which would have covered the incised lines showing on the setting bed, to act as a guide for the other tesserae. On the other hand, a pattern of laying mosaic exists, in which an entire floor is covered only with white tesserae without geometric motifs or figures of black tesserae. Through orthographic images created by laser scanning and photogrammetry, it has been observed that a floor without motifs is divided into rectangles and trapezoids, paved with white tesserae, like puzzle pieces. How did the craftsman end up covering over wide plain white mosaic floors? This division of the floor, not seen in mosaics with black tesserae motifs, could be key to revealing the craftsman's practical work, including the paving technique and the work rate involved. This study analyzes the plain mosaics of the House of Mosaic Atrium and compares them with those of some houses in Herculaneum to understand how to divide a floor into some areas like puzzle pieces.

3 A CENTRAL ANATOLIAN NEOLITHIC TRADITION? UNRAVELLING FLOOR TECHNOLOGIES AND HOUSEHOLD PRACTICES THROUGH MICRO-GEOARCHAEOLOGY

Abstract author(s): Garcia-Suarez, Aroa (Spanish National Research Council; University of Reading)

Abstract format: Oral

A notable feature of Central Anatolian Neolithic architecture is the prevalence of mudbrick houses, often displaying elaborate ritual and symbolic expressions, a highly structured use of domestic space, and a significant duration of buildings and fixtures in the same location. While these shared phenomena allow us to define what appears to be a long-lasting architectural tradition that flourished and was passed on for millennia in this part of the world, too strong a focus on building features shared by and between communities has created a rather monolithic view of these early sedentary societies.

This research examines Neolithic house floors from the sites of Pınarbaşı (9,000-7,900 cal BC and 6,500-6,000 cal BC), Boncuklu (8,300-7,800 cal BC), and Çatalhöyük (7,100-5,950 cal BC) as the material expression of distinct social practices, influenced by a wide range of variables that include resource availability, technological developments, symbolically-charged activities, and the representation of social identities. The multifaceted nature of living surfaces is here explored through the high-resolution examination of intact microstratigraphic sequences of floors, collapsed roofing and accumulated residues through integrated micromorphological and geochemical analyses. These methods bring us closer to the micro-historical scales at which consciousness of place and social relations are shaped in the everyday, in specific events and in life cycles, allowing us to investigate key issues in the creation and sustainability of settled life.

Results highlight the occurrence of distinctive building practices and maintenance strategies at each settlement as dictated by complex combinations of ecological adaptations and social boundaries, shedding light on the lesser-known aspects of Central Anatolian Neolithic architecture, such as the use of roofs and upper stories.

4 FLOORS ARE ON FIRE!! NEOLITHIC FIRED CLAY SOILS IN EL PORTALÓN DE CUEVA MAYOR SITE/SIERRA DE ATAPUERCA, SPAIN)

Abstract author(s): Iriarte, Eneko (Universidad de Burgos) - Francés-Negro, Marta (Universidad de Alcalá) - Carrancho, Ángel - Pérez-Romero, Amalia (Universidad de Burgos) - Alday, Alfonso (Universidad del País Vasco) - De Gaspar, Ignacio (Universidad Complutense de Madrid) - Smith, Colin - Valdiosera, Cristina (Universidad de Burgos) - Arsuaga, Juan Luis (UCM-ISCI) - Carretero, José Miguel (Universidad de Burgos)

Abstract format: Oral

El Portalón de Cueva Mayor located in the UNESCO World Heritage Archaeological Sites of Atapuerca, is one of the main Holocene archaeological sites in the Iberian hinterland and is located in a cave, at the entrance of the Cueva Mayor-Cueva del Silo karstic system (Sierra de Atapuerca). The archaeostratigraphic sequence of the site covers, at least, the last 30 kyr, from the Upper Pleistocene to the Middle Ages.

The ongoing excavation of the Neolithic unit has yielded unique architectural remains depicting a domestic area of Late Neolithic age (6-5 kyr cal BP). Among them an outstanding sequence of prepared clay floors which have been studied in detail and their composition and manufacture process analyzed and experimentally reproduced. Archae-

ological, petrological, mineralogical, geochemical and archaeomagnetic data indicate that the clay soils were made using an unprecedented technique. Miocene white marls from nearby outcrops were soaked into a malleable mass that was later spread on a bed of fine dry branches. Finally, fire was set at the level of branches and its combustion fired and hardened the marl paste, resulting in a uniform and cohesive orange to white colored soil floor on a fine bed of charred plant remains. This process was used at least 2 times in a room of at least 20 square meters and a large central excavated fire from a naturally illuminated habitation area, revealing the use of a constructive technique with no known analogues.

5 SOME LIKE IT RED: A MICROSTRATIGRAPHIC STUDY OF FLOORING PRACTICES IN THE AENEOLITHIC SETTLEMENT OF MONJUKLI DEPE (TURKMENISTAN)

Abstract author(s): Cereda, Susanna (Institute of Archaeologies, University of Innsbruck) - Pollock, Susan - Bernbeck, Reinhard (Institute for Near Eastern Archaeology, Freie Universität Berlin)

Abstract format: Oral

Monjukli Depe is a small village located at the northern fringes of the Kopet Dag mountains, in Southern Turkmenistan. According to the available ¹⁴C dates, inhabitation at the site started in the Late Neolithic (ca. 6200-5600 BCE) and continued—after a hiatus of approximately 800 years—into the Aeneolithic (ca. 4650-4340 BCE).

The architecture of this later phase is very well-preserved, with some walls still standing to a height of up to 1.5 m, and with houses showing notable similarities in shape, orientation and layout. In order to understand whether such macroscopic resemblance is also mirrored (at a finer scale) in the way people occupied these structures, samples for micromorphological analyses were collected from their earthen surfaces.

We here present the microstratigraphic study conducted on the floor of two buildings, House 4 and House 8, which focused on reconstructing how people took care of the built space (i.e., construction, use, waste management, maintenance and general treatment of earthen surfaces).

Results show that, beyond the existence of a shared “building standard”, houses were not inhabited in the same way and that variations in the nature, frequency and spatial arrangement of deposits indicate an origin from different activities and events, shedding also light on the relationship between humans and animals.

Ultimately, this microstratigraphic approach not only allowed to identify distinct formation processes, but also stimulated considerations about the social practices and cultural conventions materialised in those surfaces (e.g., life rhythms, concepts of cleanliness or propriety).

6 GETTING IN ON THE GROUND FLOOR? THE FLOOR SEQUENCES OF DRUMCLAY CRANNOG

Abstract author(s): Boyd, Rebecca - Barrett, Marie-Therese (IAC Archaeology)

Abstract format: Oral

At Drumclay Crannog, construction and occupation sequences were very clearly indicated during excavation, as one would expect on a crannog. The houses themselves were elementary architectural forms, essentially one-room buildings, which were often poorly preserved structurally. However, they contained as many as five different floor surfaces including timber and brushwood layers, peats, clays, wattle surfaces, hearth settings, stone pavements and wooden pathways. The chronological depth of deposits at Drumclay allows us to consider the composition and use of these floors on a continuum across the 9th to 14th centuries.

Our central question is can the depth and composition of floor deposits shed light on the duration and use of a surface? In interpreting the construction sequences, we used the presence and absence of introduced floors and surfaces to distinguish between short-term construction events and longer term occupation events. This became particularly relevant when floors were not associated with other structural elements (i.e. walls or hearths).

Our multidisciplinary analysis of the floor layers includes palaeoenvironmental work around pollen, plant, insect and animal bone assemblages, analysis of artefact assemblages, crafting practices, a dendrochronological dating programme and stratigraphical data. We will consider how the floors were constructed, maintained, and replaced at Drumclay. Our palaeoenvironmental work sheds light on the relationships between the floors, their builders and the local environment. The stratigraphic narrative allows us to consider the impact of post-depositional processes and site sinking, while the time-depths at Drumclay invites questions about building and settlement life-cycles and continuity.

In this talk, we will discuss how we combined these varied analyses (stratigraphy, environmental, artefact distributions, and chronologies) to illuminate how the people of Drumclay constructed, managed and used their floors and surfaces to structure their worlds.

7 IS IT THE FLOOR OR ISN'T IT THE FLOOR? HOW TO INTERPRET THE FILLING OF THE LA TÈNE SUNKEN HOUSES?

Abstract author(s): Lisá, Lenka (Institute of Geology The Czech Academy of Science) - Grison, Hana (Institute of Geophysics, The Czech Academy of Sciences) - Čížmář, Ivan (Institute of Archaeological Heritage Brno) - Stejskalová, Šárka (Institute of Geophysics, The Czech Academy of Sciences)

Abstract format: Oral

The floor is the horizon inside the building where different activities took place. Usually several phases of its formation producing the laminated sandwich can be identified from the section through the floor. The main aim of the paper is 1) to interpret the formation of the prehistoric sunken house floor typical by the absence of layering indicating the individual phases of the floor's formation; 2) to detect the geochemical and magnetic properties of the floor layers and describe the possible movement of phosphorus.

Five micromorphological blocks of the dimension of 20 cm was taken from different areas of the floor of La Tène sunken house in Němčice (Czech Republic). The blocks were continually resampled into small micromorphological samples transformed into thin sections of the dimension of 4 x 5 cm and the rest of the blocks was additionally sampled with the step of 1 cm into bulk samples, so each position of the bulk can be controlled in thin section. The bulk samples were measured using pXRF and magnetic properties.

Phosphorus moves about 2-3 cm below the dark infill originally interpreted as an active floor. It is linked to increased bioturbation and consumption of microfauna. Magnetic susceptibility significantly correlates with Cu and S representing metallurgic pollution. The frequency depended MS show the pedogenic processes only in the upper part of the active floor. The entrance corridor has higher values of Cu and Sn. The active floor has the parameters of a typical cultural layer without any layering or horizontally oriented material, but can be interpreted as having been formed in situ by repeated trampling of waste-contaminated material. It is therefore a certain form of active layer, i.e. from the point of view of formation processes represents the floor.

8 ANALYSES OF IRON AGE FLOORS IN NORTH-EASTERN IBERIAN PENINSULA: CONTRIBUTIONS FROM MICROMORPHOLOGY

Abstract author(s): Mateu, Marta - Belarte, Maria Carme (ICREA; ICAC)

Abstract format: Oral

We present the first results of an ongoing project focused on the study of protohistoric domestic floors through micromorphology. This technique provides information on the formation processes of domestic spaces as well as on their use and subsequent destruction. The methodology of study of occupation surfaces or floors consists on the collection of undisturbed samples from which we produce thin sections. These should allow us to observe the micro layers and micro remains that compose the sedimentation of floors, unnoticed during excavation. This technique thus enhances the information that can be obtained from the macroscopic study of archaeological remains. As study cases, we are presenting the preliminary results of the Early Iron Age site of Sant Jaume (Montsià, Tarragona) and of the Late Iron Age sites of l'Antic (Montsià, Tarragona) and Masies de Sant Miquel (Baix Penedès, Tarragona). These three sites have provided samples of occupation surfaces or floors, as well as fragments of construction materials or combustion structures that will be used for comparative purposes. Experimental works on combustion structures conducted in parallel to these analyses complement the information about the sedimentation processes of floors and the needs of maintenance related to daily activities.

FROM A HOUSE TO A STABLE: A GEOARCHAEOLOGICAL STUDY OF BUILDING 21 AT THE HILLFORT OF PUNGRT, SLOVENIA

Abstract author(s): Prijatelj, Agni (Centre for Soil and Environmental Research, Biotechnical faculty, University of Ljubljana; Centre for the Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana) - Gruškovnjak, Luka (Centre for the Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana) - Vojakovič, Petra (Centre for the Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana; Arhej Ltd.) - Milek, Karen (Department of Archaeology, Durham University) - Grčman, Helena (Centre for Soil and Environmental Research, Biotechnical faculty, University of Ljubljana) - Dolenc, Matej (Department of Geology, Faculty of Natural Sciences and Engineering, University of Ljubljana) - Črešnar, Matija (Centre for the Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana; Institute for the Protection of Cultural Heritage of Slovenia)

Abstract format: Oral

Pungrt above Ig is the first Slovenian Iron Age hillfort with a documented proto-urban design. As part of the ongoing research project at the site, we examined selected buildings at the micro-contextual level using integrated high-resolution approaches. These included micromorphology, micro-refuse and geochemical analyses, and Bayesian modelling of an extensive set of radiocarbon dates. Here, we present a dynamic socio-economic history of the Late Hallstatt Building 21. Constructed on the lowermost terrace next to a wide path along the inner face of the stone rampart, the wooden structure had stone foundations, internal partition walls, and several hearths and ceramic bowls built into floor surfaces. The floor sequence in the building consisted of a series of alternating earthen floors and dark, homogenous layers. Our microstratigraphic and geochemical analyses revealed the nature of these floor materials and accumulated occupation residues, their precise depositional pathways and their micro-contextual associations.

Throughout the building's life-cycle, three types of earthen floors were used, including constructed, clay-rich floors, calcareous mortars, and beaten floors. In addition to longer-term cycles associated with these deposit types, the microstratigraphic sequence in Building 21 contained records of various seasonal and daily activities. These included cyclical replastering of floor surfaces with finishing coatings and "red wash", re-deposited rake-outs in the vicinity of the hearths, and micro-laminations of occupational debris. In its final phase, the nature of the building changed and the structure, originally employed for dwelling, became a stable. These architectural choices and distinct household organisation provide insights into technological knowledge, social practices, human-animal relations, and multiple temporalities associated with the building's life cycle. As such, they allow us to address previously under-explored topics within the hillfort research, most notably the issues of the social space, ecological relations, various discard and sanitation practices, and overall community sustainability.

FLOOR OF A SMITHY VIEWED THROUGH THE MICRO-REFUSE ANALYSIS IN BUILDING 24 AT THE HILLFORT OF PUNGRT ABOVE IG, SLOVENIA

Abstract author(s): Gruškovnjak, Luka (Centre for Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana) - Prijatelj, Agni (Centre for Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana; Centre for Soil and Environmental Research, Biotechnical Faculty, University of Ljubljana) - Vojakovič, Petra (Centre for Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana; Arhej d. o. o.) - Burja, Jaka (Institute of Metals and Technology - IMT) - Vinazza, Manca (Centre for Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana) - Toškan, Borut - Tolar, Tjaša (Institute of Archaeology, Research Centre of the Slovenian Academy of Sciences and Arts) - Grčman, Helena (Centre for Soil and Environmental Research, Biotechnical Faculty, University of Ljubljana) - Črešnar, Matija (Centre for Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana; Institute for the Protection of Cultural Heritage of Slovenia)

Abstract format: Oral

Since the development-led excavation in 2020 and 2021, the proto-urban hillfort of Pungrt above Ig, located in the vicinity of the Slovenian capital of Ljubljana, has rapidly gained a reputation as one of the most important Early Iron Age sites in Slovenia. This excavation, the largest of any hillfort settlement in Slovenia, was accompanied by extensive geoarchaeological sampling of various floor sequences and open area surfaces across the best-preserved areas of the site. The two sampling strategies employed at the selected buildings were vertical micromorphological sampling in exposed sections and horizontal sampling in a grid for micro-refuse and geochemical analyses. In this paper we examine the insights into daily activities and the structured use of space provided by the micro-artefact analyses, and demonstrate that such a thorough understanding of space could never be garnered through the excavation data alone.

The ongoing laboratory analysis of micro-artefact assemblages – undertaken within a research project funded by the Slovenian Research Agency – is an integral component of this first high-resolution geoarchaeological study of any

hillfort site in Slovenia. Micro-artefact identification and characterisation involve several different analytical techniques, including petrography, metallography, chemical analysis and electron microscopy with microchemical analysis, which are coupled with zooarchaeological and paleobotanical analyses of bone and plant micro-refuse. The distributions of identified types of material are analysed in a GIS environment and complemented with magnetic susceptibility and micromorphology data. Here, we present the results of the micro-refuse analysis of the floor at the Late Hallstatt multi-room Building 24, including insights into the locations of the entrance into the building and various items of furniture, as well as different activities related to distinct indoor areas. Most notably, the seemingly inconspicuous southern room that provided no hints of its use during the excavation was identified as a smithy.

11 **UNDISTURBED SOIL SAMPLE METALLOGRAPHY AS A TOOL TO UNDERSTAND ACTIVITIES, ORGANISATION, DYNAMICS AND FLOOR MANAGEMENT PRACTICES IN A BLACKSMITH WORKSHOP**

Abstract author(s): Jeannot, Rémy (Laboratoire Chrono-environnement, UMR 6249, CNRS, Université de Franche-Comté; Laboratoire Metallurgies et Cultures - IRAMAT, UMR 7065, CNRS, Université de Technologie de Belfort-Montbéliard) - Gebhardt, Anne (Laboratoire Interdisciplinaire des Environnements Continentaux - LIEC, UMR 7360, CNRS; Laboratoire Image Ville Environnement, Université de Strasbourg - LIVE, UMR 7362, CNRS; Institut National de Recherche en Archéologie Préventive - INRAP) - Gauthier, Joseph (Laboratoire Chrono-environnement, UMR 6249, CNRS, Université de Franche-Comté; Centre de Recherche sur les Sociétés, les Arts et les Techniques, UR 3436, Université de Haute-Alsace)

Abstract format: Oral

Archaeology, through the study of structures and artefacts, allows a certain level of understanding of the purposes of artisanal spaces; but as structures can have multiple functions and artefacts may be evacuated throughout the time of activity, the image perceived by archaeologists is often quite incomplete. In this regard, the floor deposits, especially when composed of a thick accumulation of wastes, may conceal a new layer of information regarding the activities undertaken in the workshop, their spatial organisation and temporal dynamics.

In this communication, we aim to discuss the contributions of the study of undisturbed soil samples from a XVIth century mining forge – in regard of a few similar approaches – by reflected light microscopy. The excavation of this site, the Carreau Ste Barbe in Sainte-Marie-aux-Mines (France), from 2018 to this year, allowed to document a complex workshop, whose floor underwent multiple transformations, from drainage to levelling, while accumulating a large amount of smithing wastes. In this context, micromorphology helped to understand the dynamics of the accumulation; a metallographic investigation of the hammerscales and other microscopic debris then allowed to associate different areas with the activities they sheltered.

Similar approaches have been used occasionally for more than a decade, either by paleo-metallurgists or micro-morphologists, but rarely published; as they have become more widely employed in recent years, we hope to contribute to their development with examples in which these methods helped to understand the everyday works of blacksmiths and their perception of the floor they worked on.

12 **EVIDENCE FOR DAILY ACTIVITIES AND CULTURAL ASSOCIATIONS LOCKED INTO FLOORS**

Abstract author(s): Scott Cummings, Linda (PaleoResearch Institute)

Abstract format: Oral

Floors contain evidence of living conditions, daily activities, and more. The microfossil record including pollen, phytoliths, and parasite eggs may become embedded in compacted dirt floors, while macrofloral remains are more typically found in the “floor fill” or uncompacted fill immediately above compacted floors. Seeds are more fragile than either pollen or phytoliths, and, as such, they often are subject to breakage rather than being driven into the compacted occupational surfaces. Stratigraphic sequences of remodeling provide information concerning changes in activity or access to resources. Activity areas often revolve around architectural details in the living space. Use of the ceiling rafters to hang plants to dry may be reflected in distribution of pollen across floors or portions of floors. Concentrations of pollen associated with broken vessels may represent long-term or short-term storage. Recovery of those remains in the vicinity of a hearth, for instance, may signal preparing medicinal tea. Elevated quantities of microfossil remains may be mapped across floors to observe patterns reflecting activities. Exterior floors between dwellings may be compared with floors inside those dwellings to make inferences concerning use of the common spaces. Multiple examples of floors, ranging from prehistoric pithouses to historic bars are illustrated.

13

DAMP AND STICKY UNDERFOOT: INVESTIGATING FLOOR MAINTENANCE PRACTICES AT THE IRON AGE WETLAND SETTLEMENT OF BLACK LOCH OF MYRTON, SCOTLAND

Abstract author(s): Roy, Lynne - Crone, Anne - Cavers, Graeme - Robertson, Jackaline (AOC Archaeology Group) - Allison, Enid (Canterbury Archaeological Trust) - McKay, Helen (University of Durham) - Whitehouse, Nicki (University of Glasgow) - Davies, Kimberley (University of Bournemouth)

Abstract format: Oral

An extraordinary degree of organic survival at the Iron Age wetland settlement of Black Loch of Myrton has provided a rare opportunity for a detailed multi-proxy study of in situ flooring deposits. Focusing on the results of micromorphological analysis, this paper will discuss how analysis of flooring deposits from the two best preserved roundhouse structures in the settlement (Structures 2 and 3), has provided insight into floor maintenance practices and identification of activity areas.

The occupation of both structures took place in the damp of a Scottish lochside. Analysis of the composition of floors from both structures has revealed bracken to be the principal component, with reeds, sedge, peat, peaty turfs and roundwood also utilised. The flooring initially appears to have been laid in dry conditions, but as time progressed the flooring materials decayed and additional matter was laid down in rising damp. This necessitated regular flooring maintenance in the form of importation of yet more plant materials and the removal of decayed flooring.

The results of micromorphological analysis have been compared with analyses of plant macrofossils, insects, artefacts and faecal steroids in order to identify differential use of space. This has shown trampling of food and fuel around the hearths while beyond the hearth-space, the interior remained remarkably free of evidence for human activity.

This paper will conclude with a discussion of the implications of the analysis of the floors from Structures 2 and 3 for the interpretation of flooring deposits on equivalent dryland sites. Did the prevailing damp conditions require an approach to floor maintenance that necessitated importation of unusual quantities of organic material? Alternatively, are the maintenance practices inferred from the evidence in the flooring deposits from the structures representative of a practice that leaves little trace in the archaeological record in non-waterlogged sites?

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FLOOR BIOGRAPHIES: THE MICROMORPHOLOGICAL STUDY OF LATE MEDIEVAL FLOORS FROM THE SITE OF IEPER DE MEERSEN (YPRES, BELGIUM)

Abstract author(s): Devos, Yannick (Vrije Universiteit Brussel) - De Groote, Koen (Flanders Heritage Agency)

Abstract format: Oral

In 2018 a series of well-preserved floor microstratified layers were discovered within three houses on the site of Ieper De Meersen, situated in the historical centre of Ypres. The site is situated on the westbank of the river Ieperlee and was developed as a new parish (St Nicholas) in the early 13th century. Around the middle of that century, several half-timbered houses were erected on a small dead-end street north of the churchyard. All the well-preserved floor levels can be dated between 1250 and 1325 AD. Although these plots remained inhabited until the establishment in 1598 of an abbey on this site, no younger floor levels have survived.

The individual layers are typically only a few millimeters thick, rendering their study a difficult task. Micromorphology, the study of soils and sediments in their undisturbed state at a microscopic level, allows to characterize the individual layers.

Beyond enabling to come to a typology of the different layers, it also permits to reconstruct the biography of the floor. Indeed, such a micromorphological study can provide details on the construction, maintenance and abandonment of the floors, their preservation status, but also on the spatial organization within the house.

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THE MEETING OF OPPOSITES: A MICROMORPHOLOGICAL COMPARITIVE STUDY OF FLOORS FORMED THROUGH SEASONAL AND LONG TERM OCCUPATION IN PRE-INDUSTRIAL ICELAND

Abstract author(s): Beck, Sólveig (Institute of Archaeology in Iceland)

Abstract format: Oral

This paper presents the results of a micromorphological comparative study of floor layers from two tent booths at a medieval, seasonal trading station in Gásir in Eyjafjörður, Northeast Iceland, and two pre-industrial turf and stone buildings, historically known to have housed a school dormitory and a meat store at the episcopal see in Skálholt, Southwest Iceland.

The study reveals that floor structure within the tent booths consists of sequences of multiple, thin lenses of peat ash, and/or soil and sand mixed with such ash that can all be clearly delineated. There is indication of trampling or floor removal, and very little indication of anthropogenic debris beyond basic subsistence. The living space in the dormitory reveals fine soil floors with similar thickness as the tent booths, but clear multiple darker and sharper sequential floor crusts and indications of localised activities of the school boys such as peat ash, bone fragments and feather quill shav-

ings. The meat store floor structures are fundamentally different and represent deposits formed through long term, heavy duty cooking activities and trampling. The floors consist of multiple, thick sequences of turf layers inundated with large fragments of anthropogenic debris such as wood chips and burned bones, topped with sharp, dark floor crusts. Fuel debris present is a mixture of charred fragments and ashes from wood charcoal, peat and dung. Clear indications are identified of truncations likely due to cleaning, and floor maintenance, e.g. pockets of sandy soil, turves or wood chip layers for levelling.

It is clear from this study that the sampled living spaces demonstrate major structural and material differences between occupational surfaces formed in open tent booths during seasonal short term subsistence in close contact with its natural surroundings, and strongly organised and compartmentalized activities within roofed turf- and stone dwellings on farms occupied long term.

16 THE MULTI-FUNCTIONAL AND MULTI-SENSORY 'BYRE': THE ANALYSIS AND INTERPRETATION OF VIKING-AGE ANIMAL SPACES

Abstract author(s): Milek, Karen - Evans Tang, Harriet (Department of Archaeology, Durham University) - Harraut, Loïc (Department of Archaeology, Durham University; Laboratoire des Science de l'Environnement Marin, Université de Bretagne Occidentale) - Groenewald, Patricia (Department of Archaeology, University of Cape Town)

Abstract format: Oral

Microscopic and geochemical analyses of occupation surfaces in excavated buildings play crucial roles in the identification and interpretation of spaces occupied by animals. Geoarchaeological research on well-preserved floor deposits in Viking-Age houses in Iceland with putative byre ends has uncovered a surprising range of activities, including metalworking. This sheds new light on the features and objects previously found in presumed animal spaces that were interpreted as anomalies. Moreover, the traditional view that byre-dwellings were used only for cattle needs to be re-assessed in light of recent faecal lipid biomarker work demonstrating the presence of other small animals within houses, including goats. When faecal lipid biomarkers have been applied more widely across occupation surfaces, they have also shown that the presumed 'byre-end' is not the only place where animal faeces become integrated into house floor deposits. Moreover, combining faecal lipid concentrations and lipid markers for urine points to other parts of the house where small animals were likely to have been stalled, raising wider questions about where and how it was acceptable to keep animals in close proximity to humans. This paper draws on two detailed geoarchaeological case studies, the 10th-century houses at Aðalstræti 16, in Reykjavík, and Hrísbú, in Mosfellsdalur (Iceland), as well as other Viking-Age dwelling houses in the North Atlantic region, to explore the how the designs, varied uses, and maintenance of Viking-Age dwelling houses would have impacted how they would have been perceived – visually, by sound, and by smell – as people moved through them.

A. DIGITALISATION OF MAGDALENIAN FLOORS AS A METHOD OF ANALYSIS: THE CASE OF A MAGDALENIAN DWELLING STRUCTURE FROM LA GARMA (SPAIN)

Abstract author(s): García-Noriega, Carlos (Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria-Gobierno de Cantabria-Grupo Santander; Grupo de Investigación Reconocido SCOPE) - Portero, Rodrigo (University of Salamanca; Grupo de Investigación Reconocido PREHUSAL; Grupo de Investigación Reconocido SCOPE) - Ontañón, Roberto (Museo de Prehistoria y Arqueología de Cantabria-Cuevas Prehistóricas de Cantabria; Grupo de Investigación Reconocido SCOPE) - Arias, Pablo (Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria-Gobierno de Cantabria-Grupo Santander; Grupo de Investigación Reconocido SCOPE)

Abstract format: Poster

Technological advances has allowed the development of new tools for scientific analysis to create new working methods with digital techniques. In this context, La Garma research project aims to develop a new method for the study of living floors, oriented towards the Intrasite Spatial Analysis of the occupation surface of a Paleolithic structures in The Lower Gallery of La Garma.

The method combines fieldwork with digital tools such as photogrammetry, Geographic Information Systems and Spatial Databases. Firstly, photogrammetry is used to obtain a high-resolution georeferenced orthophoto, which will be included in a Geographic Information System based project. The vector data is collected and stored in an object-oriented relational database management system, linked to our GIS project, so that we build a robust model for classifying, editing, recording and analysing the data.

Our objectives focus on the development of an efficient and simple method that, given the peculiarity of our case study, with an undisturbed occupation surface, is respectful of the conservation and preservation of the archaeological remains. Therefore, the main work is based on the use of non-invasive techniques that allow less manipulation of the archeological record, giving priority to the preservation of the archaeological site.

The results obtained make it possible, on one hand, to identify, catalogue and record all the archaeological data in real time and with great precision, facilitating the study both in the field and in the laboratory. On the other hand, this method makes it possible to observe and analyse spatial relationships between the archeological remains from a large amount of attributes or numeric data, so that the organisation of each layer can be reconstructed.

661 PATHOGENIC DISEASE IN THE PAST

Session theme: 6. Contested Pasts & Presents

Session organisers: Wilkin, Shevan (Institute of Evolutionary Medicine, University of Zurich) - Majander, Kerttu (University of Vienna)

Session format: Regular session

Diseases and epidemics have ravaged human populations for millennia. How we identify those who suffered from communicable diseases ranges across several methods, and often these can be combined to produce a more nuanced differential diagnosis. Commonly used methods include consulting historic documents that detail symptoms and their descriptions, paleopathological assessments of skeletal remains, and metagenomic screening for the presence of pathogenic bacteria or viruses. More recently, studies of bone and dentine proteomes are attempting to discover immunological biomarkers of specific illnesses, however this method is still in its infancy. This session aims to bring together those who utilize these methods, and others not mentioned above, to investigate disease and to improve our understanding of health states in past populations. Through presentations of published and ongoing studies, combined with fruitful discussions of the future of ancient diseases research, we aim to develop a strong, supportive working group of researchers within the discipline.

ABSTRACTS

1 GOATS, GERMS, AND GENES: EXPLORING THE NEOLITHIC IMPACT ON LIVESTOCK HEALTH AND ZONOSIS IN THE ZAGROS MOUNTAINS AND SOUTHWEST ASIA

Abstract author(s): L'Hote, Louis (Trinity College Dublin) - Bangsgaard, Pernille - Yeomans, Lisa (University of Copenhagen) - Mashkour, Marjan (National Museum Natural History Paris) - Zeder, Melinda (National Museum of Natural History, Smithsonian Institution) - Daly, Kevin - Bradley, Dan (Trinity College Dublin)

Abstract format: Oral

The Neolithic period in Southwest Asia was characterised by the domestication of livestock animals, which had a profound effect on human health, as it provided a stable source of animal protein and secondary products. However, this increased interaction between animals and humans also resulted in a heightened risk of zoonotic disease transmission, both within herds and between animals and humans. Despite the recovery of numerous ancient human pathogen genomes through high-throughput sequencing techniques, a limited number of livestock pathogen genomes have been recovered to date. My work focuses on obtaining pathogen and animal metagenomic aDNA from 10,000-year-old sheep and goat material from the Zagros Mountains in Iran, a region with some of the earliest evidence of goat herding and the zoonotic brucellosis in humans. The objective of this study is to understand the impact of the inception of animal farming on the evolution and spread of zoonoses within livestock populations and across species barriers. Additionally, I aim to explore the impact of this transition on the genetic health of ovicaprids by examining patterns of inbreeding and genetic diversity at the immune gene and genome levels, revealing the robustness of the early livestock herd and neolithic food security.

2 CONTRASTING EVOLUTIONARY AND ADAPTIVE HISTORIES REVEALED FOR THREE ORAL PATHOBIANTS RECOVERED FROM BRONZE AGE IRISH REMAINS

Abstract author(s): Jackson, Iseult (Smurfit Institute of Genetics, Trinity College Dublin; Science Foundation Ireland Centre for Research Training in Genomics Data Science) - Fibiger, Linda (University of Edinburgh) - Dowd, Marion (Atlantic Technological University) - Cassidy, Lara (Smurfit Institute of Genetics, Trinity College Dublin)

Abstract format: Oral

The development of ancient genomic techniques has allowed the exploration of both host genomes and the genomes of commensal and pathogenic microbes. Teeth provide a particularly rich substrate: as well as endogenous host DNA, they are a source of DNA from both bloodborne pathogens and the oral microbiota. We carried out metagenomic screening of a dataset of 344 published tooth and calculus samples from diverse prehistoric, Medieval and early modern contexts. This identified two teeth from a limestone cave (Killuragh, Co. Limerick, Ireland) with exceptional preservation of oral pathobiont species. Both were found to belong to a single Early Bronze Age individual (2343-2036 cal BC). Given the large quantities of pathobiont DNA recovered, novel ancient genomes could be assembled

de novo for two species, *Streptococcus mutans* and *Treponema denticola*, while a third, *Tannerella forsythia*, was reconstructed through reference alignment. An additional 38 *T. denticola* and 18 *T. forsythia* ancient genomes were reconstructed from published samples in the literature. This dataset provided unprecedented resolution on the evolutionary histories of these three pathobionts. Contrasting phylogenetic patterns were observed, with a very recent adaptive radiation observed for *T. forsythia* in the early modern period and deep divergences within modern *S. mutans* diversity, some pre-dating the branch leading to Killuragh. Comparative analysis also revealed differences in the functional repertoires of oral pathobionts. Changes in the presence of key virulence factors in the species' pangenomes correlates with changes in human behaviour, such as dairying, industrialisation and the widespread use of antibiotics. The timing of these changes appears to differ between species, suggesting differences in the factors affecting these pathobionts' co-evolution with their human hosts.

3 INFECTIOUS DISEASES IN THE LATE VIKING AGE TOWN OF SIGTUNA

Abstract author(s): Pochon, Zoé (Department of Archaeology and Classical Studies, Stockholm University; Centre for Palaeogenetics) - Kirdök, Emrah (Department of Biotechnology, Faculty of Science, Mersin University) - Oskolkov, Nikolay (Department of Biology, National Bioinformatics Infrastructure Sweden, Science for Life Laboratory, Lund University) - Krzewińska, Maja - Götherström, Anders (Department of Archaeology and Classical Studies, Stockholm University; Centre for Palaeogenetics)

Abstract format: Oral

Infectious diseases are not easy to detect in paleopathology. Long-lasting diseases such as tuberculosis, leprosy, syphilis and brucellosis can leave visible traces on the bones, but this is not the case for most infectious diseases. With the development of next-generation sequencing techniques, it is now possible to recover the genomes of ancient humans but also of the pathogens they were hosting at the time of death such as *Yersinia pestis*, the agent of plague. Here we focus on the impact of urbanization on infectious disease with the Late Viking Age town of Sigtuna as a case study. Over 40 individuals were subjected to shotgun sequencing and screening for potential pathogens using a new ancient metagenomics workflow developed in collaboration with the National Bioinformatics Infrastructure Sweden (NBIS), called aMeta and available on GitHub. Preliminary results are promising, with the detection of the foodborne pathogen *Yersinia enterocolitica* and the sexually transmitted infections *Neisseria gonorrhoeae* and Hepatitis B virus. A further increase in the number of individuals considered in this study suggests the presence of another infectious disease not common in these latitudes today. We are generating phylogenetic trees comparing the pathogenic strains found with other ancient and modern strains to better understand the way of transmission of these diseases through time and space. We hope that our study will provide greater insight into the infectious diseases that were common in a Late Viking Age early urban site.

4 PROTEOMICS OF ANCIENT IMMUNOLOGY: REFINED METHODS TO DETECT ACTIVE LEPROSY IN MEDIEVAL INDIVIDUALS

Abstract author(s): Wilkin, Shevan (University of Zurich) - Lannigan, Liam (The Globe Institute, University of Copenhagen) - Montes, Nuria - Fontanals-Coll, Maria (Unitat d'Antropologia Biològica, Universitat Autònoma de Barcelona) - Avanzi, Charlotte (Colorado State University) - Singh, Pushpendra (ICMR-National Institute of Research, India) - Schuenemann, Verena (Department of Evolutionary Anthropology, University of Vienna) - Taurozzi, Alberto (The Globe Institute, University of Copenhagen) - Collins, Matthew (McDonald Institute for Archaeological Research)

Abstract format: Oral

Palaeopathology and ancient DNA, often used in tandem, have been successfully used to identify diseases in past individuals. While this provides an effective method to detect pathogen presence, much remains unknown about identifying active infections and the host response to past pathogens. Protein analysis offers new insights into how the immune system of those suffering from infections and diseases responded. However, proteomic analysis of bone and dentine samples are often complicated by an overwhelming presence of collagen, the most abundant protein in both tissues. Tandem mass spectrometry focuses on the most common peptide masses which often leads to collagen "swamping" out lower abundance peptides, leaving these lower-abundance proteins undetected. Here we present a protocol combining a recently developed digestion enzyme to reduce collagen with optimized extraction steps to specifically target immune proteins that would be otherwise hidden. We conducted comparisons of tissue types, denaturation agents, extraction fractions, and digestion enzymes in order to identify the most effective protocol for identifying the non-collagenous portion of the proteome, specifically focused on immune-related protein recovery. We illustrate our optimized methodology through a combined DNA and protein immunological case study of individuals from a Medieval Spanish leprosarium, as well as four individuals interred in a non-leprosy associated context. Through this combined approach, we have identified specific immune-related proteins that may indicate active leprosy infections at the time of death of these individuals. The results of this study have widespread implica-

tions for future work, and present numerous possibilities for palaeopathological/biomolecular studies focused on past health and disease.

5 HIGH-COVERAGE GENOMES OF *TREPONEMA PALLIDUM* BACTERIA FROM ANCIENT HUMAN-REMAINS ILLUMINATE THE EVOLUTION OF TREPONEMAL DISEASES

Abstract author(s): Majander, Kerttu (Department of Evolutionary Anthropology, University of Viennaustria) - Pla-Díaz, Marta (Unidad Mixta Infección y Salud Pública FISABIO/Universidad de Valencia-I2SysBio; CIBER in Epidemiology and Public Health, Spain) - du Plessis, Louis (Department of Biosystems Science and Engineering, ETH Zürich; Swiss Institute of Bioinformatics) - Panagiotopoulou, Hanna - Doan, Karolina - Bogdanowicz, Wiesław (Museum and Institute of Zoology, Polish Academy of Sciences) - Dąbrowski, Paweł (Department of Anatomy, Wrocław Medical University) - Oziębłowski, Maciej (Faculty of Biotechnology and Food Sciences, Wrocław University of Environmental and Life Sciences) - González-Candelas, Fernando (Unidad Mixta Infección y Salud Pública FISABIO/Universidad de Valencia-I2SysBio; CIBER in Epidemiology and Public Health, Spain) - Schuenemann, Verena (Department of Evolutionary Anthropology, University of Viennaustria; Institute of Evolutionary Medicine, University of Zurich; Human Evolution and Archaeological Sciences - HEAS, University of Viennaustria)

Abstract format: Oral

Treponema pallidum bacteria, the causative agents of sexually transmitted syphilis, and the endemic nonvenereal yaws and bejel, are well adapted to their human host, and currently re-emerging despite the eradication efforts by WHO and medical communities around the world. *Treponema pallidum* spirochetes are extremely difficult to cultivate in vitro, stalling the research on the main functional mechanisms of treponemal infections and on the exact requirements of their transmission and host immunity evasion.

Ancient DNA has the potential to revolutionize the research on pathogens that have accompanied humans throughout history. Classical archaeology and paleopathology now come together with genetic approaches, such as high-throughput sequencing and target enrichment methods, in exceedingly successful studies where reconstructed genomes of past pathogens are used to complement the information provided by modern pathogen genomics.

Here we present some of the most recent advancements in resolving the history and origins of *Treponema pallidum*, and demonstrate the power of in-depth analyses gained through high-coverage ancient genomes of this bacterium. A novel, 17th century genome of the syphilis-causing *T. pallidum pallidum* bacterium, retrieved from human remains from an archaeological context in Wrocław, Poland, is used to reveal previously unknown recombination events and positive selection, affecting the patterns of divergence between the subspecies of *T. pallidum*. Furthermore, molecular dating of the treponemal subspecies' divergences is generated through a combined dataset of ancient and modern treponeme genomes. Overall, our results shed light on hitherto poorly known evolutionary adaptations of treponemes, and help tracing back the emergence and early relations of the treponemal subspecies.

6 THE BONE PROTEOME: CREATING A DATABASE OF 'NORMAL' VARIATION IN PEPTIDE COMPOSITION OF ARCHAEOLOGICAL HUMAN BONE

Abstract author(s): Burnett, Alexandra (ProGenTomics, Laboratory of Pharmaceutical Biotechnology, Faculty of Pharmaceutical Sciences, Ghent University; ArcheOs Laboratory for Biological Anthropology, Faculty of Arts and Philosophy, Ghent University) - Daled, Simon - Maarten, Dhaenens (ProGenTomics, Laboratory of Pharmaceutical Biotechnology, Faculty of Pharmaceutical Sciences, Ghent University) - Deforce, Dieter (Laboratory of Pharmaceutical Biotechnology, Faculty of Pharmaceutical Sciences, Ghent University) - De Groote, Isabelle - Palmer, Jessica (ArcheOs Laboratory for Biological Anthropology, Faculty of Arts and Philosophy, Ghent University)

Abstract format: Oral

Recent research has shown tantalising potential for the identification of bone protein biomarkers related to age, sex, and even ethnicity, which could be invaluable to the reconstruction of individual biographies and population demographics in archaeology (e.g. Sawafuji et al. 2017; Procopio, Chamberlain & Buckley 2017; Johnston & Buckley 2021). However, this research has predominantly been pursued through animal proxies or modern human bone, with limited comparability to archaeological human bone proteomes. Palaeopathological human studies, meanwhile, have usually been undertaken on singular individuals without comparators, making it difficult to assess the significance of proteins as indicative for immune responses (e.g. Bona et al. 2014). In the interests of improving knowledge of human bone proteome taphonomy, interrogating evidence for the survival of proposed biographical biomarkers over archaeological time, and providing a baseline for the analysis of pathological bone, we will analyse rib samples from a subset of the postmedieval population of Aalst, Belgium. We will explore intra-element variation, intra-individual variation, and inter-individual variation among children and adult men & women, by sampling multiple physiologically distinct areas across upper and lower ribs without apparent osteological lesions. These will be analysed using both data-dependent (DDA) and data-independent (DIA) acquisitions on state-of-the-art instrumentation – the ZenoTOF 7600 mass spectrometer – to explore the full range of semi- and non-tryptic peptides present, and to create a future-proof

data archive of the resultant ions for future re-analysis and widespread applications. Crucially, this comprehensive 'healthy' baseline is hoped to provide a basis for comparison in the analysis of pathological bone from Aalst and for other archaeological populations.

- Bona et al. 2014: DOI 10.1371/journal.pone.0087215
- Johnston & Buckley 2021: DOI 10.1021/acs.jproteome.0c00555
- Procopio, Chamberlain & Buckley 2017: DOI 10.1021/acs.jproteome.6b01070
- Sawafuji et al. 2017: DOI 10.1098/rsos.161004

662 RUN TO THE VALLEYS [PAM]

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Pereira, Telmo (Universidade Autónoma de Lisboa; Instituto Politécnico de Tomar; Centro de Geociências da Universidade de Coimbra; UNIARQ, Centro de Arqueologia da Universidade de Lisboa) - Abrunhosa, Ana (CENIEH - Centro Nacional de Investigación sobre la Evolución Humana; ICArEHB - Interdisciplinary Center for Archaeology and Evolution of Human Behaviour)

Session format: Regular session

Pleistocene and Early Holocene hunter-gatherer ecodynamics were characterized by the exploitation of resources from their natural sources. As environmental conditions changed, the presence, amount, quality, and visibility of many such biotic and abiotic resources also changed. Moreover, the overall comfort may have also been decisive in occupying or not a particular space during specific periods in relation to environmental conditions and accessibility to such resources.

One of the best setups where a diversity of resources and humans clustered were valleys and canyons. But, these geomorphological features were also where considerable erosion and deposition occurred. Ultimately, the environmental conditions that caused sedimentation and/or erosion were responsible for allowing the preservation or causing obliteration of the evidence of human presence and testimonies of human activity.

In this session, we bring together case studies of single and multiple occupation sites in valleys from around the world during the Pleistocene and Early Holocene. Our goal is to discuss human behaviour, adaptation, ecodynamics, resource exploitation, and archaeological visibility.

ABSTRACTS

1 THE MIDDLE STONE AGE IN THE TANZANIAN RIFT VALLEY: DGS, A NEW SITE IN THE OLDUVAI GORGE

Abstract author(s): Solano-Megías, Irene (Centro Nacional de Investigación sobre la Evolución Humana - CENIEH; Universidad de Burgos- UBU) - Maíllo-Fernández, José Manuel (Universidad Nacional de Educación a Distancia - UNED; The Institute of Evolution in Africa - IDEA) - Marín, Juan (Universidad Nacional de Educación a Distancia - UNED; Institut Català de Paleoecologia Humana i Evolució Social - IPHES) - Martín-Perea, David (Universidad Complutense de Madrid - UCM; The Institute of Evolution in Africa - IDEA) - Abellán, Natalia (Universidad Nacional de Educación a Distancia - UNED; The Institute of Evolution in Africa - IDEA) - Gidna, Agness (Department of Cultural Heritage, Ngorongoro Conservation Area - NCAA) - Mabulla, Audax (University of Dar Es Salaam)

Abstract format: Oral

Adaptation and exploitation of the environment by human groups in terms of its surroundings is one of the circumstances that make human beings particularly unique. Middle Stone Age (MSA) research in East Africa has received special attention over the past years. Dorothy Garrod Site (DGS), discovered during a fieldwork survey in 2017, demonstrate the enormous potential of Olduvai Gorge (northern Tanzania) for the study of the MSA period. DGS shed new lights on an almost unknown area at least for the MSA with a known stratigraphic context.

This communication reports on a new MSA site, located on the north bank of the Olduvai river and embedded within the Ndutu Formation, specifically in a cemented tuffaceous silt level. DGS is characterized by only one archaeological level that has yielded a functional association between faunal remains and lithic industry.

DGS shows a human occupation where lithic and fauna display evidence of human manipulation (knapping, percussion and burning remains), contributing enormously to understanding the settlement patterns and the interaction of modern humans with the environment.

From a technological point of view, the site is characterized by discoid methods and the near absence of other technological methods and lithic points. All raw materials used have a local origin, either of primary or secondary access. This pattern seems to correspond to the open-air deposits studied in the area. In contrast, the exogenous raw material

- obsidian from southern Kenya- is well known from sheltered deposits to the north and south of the Olduvai Gorge which was a passing point for the obsidian circulation.

2 LOCATING CAVE ENTRANCES AND OTHER KARSTIC PHENOMENA USING DRONE-DERIVED LIDAR DATA AT RIVER LIS' CANYONS (LEIRIA, PORTUGAL)

Abstract author(s): Dias, Rita (Era - Arqueologia, Conservação e Restauro; ICArEHB) - Fonte, João (Universidade da Maia/ISMAI; ERA Arqueologia S.A.) - Pereiro, Tiago - Hipólito, João (ERA Arqueologia S.A.) - Monteiro, Patrícia (LARC-DGPC; ICArEHB) - Pereira, Telmo (Universidade Autónoma de Lisboa; Instituto Politécnico de Tomar; Centro de Geociências da Universidade de Coimbra; UNIARQ)

Abstract format: Oral

Prehistoric spatial networks were subject to a plethora of variables both natural and human-dependent in an ever-changing landscape. In that sense, the central coast of western Iberia is an interesting case study to hunter-gatherer dynamics between coastal and inland territories, due to specific ecological and geomorphological features, abundant flint resources, and karstic canyons that connect the coast to the mountains inland.

To this day, there have not been many LiDAR surveys focusing on the discovery of karstic features entrances, and the few attempts were mainly focused on locating sinkholes. Here we attempt to investigate the existence of various types of entrances (small vertical cave shafts, horizontal and sub-horizontal caves, and rockshelters) in a densely vegetated terrain, with difficult foot access, through high-resolution drone-derived LiDAR data. An efficient pipeline to collect, process and visualise LiDAR-derived point clouds and elevation models of karstic landscapes was developed to further contribute to the understanding of prehistoric spatial networks in this type of landscape and specifically, in this case, the resources exploited in each settlement and the pathways used to move across and between landscapes. In addition, and depending on the increase in the cave entrances dataset, there is good potential for automating its mapping through artificial intelligence.

3 LATE PLEISTOCENE ARCHAEOLOGY OF THE TANANA VALLEY, ALASKA

Abstract author(s): Wygal, Brian (Adelphi University)

Abstract format: Oral

The Tanana Valley in interior Alaska has been home to the Dene people since time immemorial. Their longevity is a testament to the rich and changing ecosystems of interior Alaska. Consequently, the region has established a benchmark for late Pleistocene archaeology throughout eastern Beringia and has been critical for understanding the timing and routes of First Nation peoples in the Americas. In this paper, we review the unique periglacial environments of the middle Tanana Valley through the study of its rich geoarchaeological and palaeoecological records contained in deep deposits of calcareous aeolian loess. A history of research at key sites in the region combined with advances in archaeological methods and theory improves our understanding of people, plants, and animals during the Late Glacial period. While the Mead, Broken Mammoth, and Swan Point archaeological sites provide detailed views into late Pleistocene behaviors and especially their food quest, recent research from the Holzman site reveals specific aspects of Paleolithic life in the subarctic.

4 CANYONS AS REFUGE AREAS DURING THE LAST GLACIAL MAXIMUM IN WESTERN-MOST EURASIA

Abstract author(s): Pereira, Telmo (C.E.U.-Cooperativa de Ensino Universitário; Instituto Politécnico de Tomar; CGeo – Centro de Geociências da Universidade de Coimbra; UNIARQ – Centro de Arqueologia da Universidade de Lisboa) - Monteiro, Patrícia (LARC – Laboratório de Arqueociências, Direção Geral do Património Cultural; ICArHEB – Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour, Universidade do Algarve) - Haws, Jonathan (Department of Anthropology, University of Louisville; ICArHEB – Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour, Universidade do Algarve) - Benedetti, Michael (Department of Earth and Ocean Sciences, University of North Carolina Wilmington; ICArHEB – Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour, Universidade do Algarve) - Carvalho, Milena (ICArHEB – Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour, Universidade do Algarve) - Friedl, Lukas (Department of Anthropology, University of West Bohemia; ICArHEB – Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour, Universidade do Algarve) - Paixão, Eduardo (TraCEr – Laboratory for Traceology and Controlled Experiments, MONREPOS – Archaeological Research Centre and Museum for Human Behavioural Evolution, RGZM; The Institute of Archaeology, The Hebrew University of Jerusalem; ICArHEB – Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour, Universidade do Algarve) - Nora, David (The Institute of Archaeology, The Hebrew University of Jerusalem; ICArHEB – Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour, Universidade do Algarve) - Paya, Alexandre (CGeo – Centro de Geociências da Universidade de Coimbra; Instituto Politécnico de Tomar)

Abstract format: Oral

The Last Glacial Maximum was a period of harsh global conditions with great pressure on flora, fauna, and human societies. In the northern hemisphere, including Europe, the coverage of most of the septentrional and high regions with ice sheets led people to change their land-use patterns and to move into lower and meridional territories. However, these were not homogeneous due to variations in geography and the availability of suitable habitat space at regional and local scales. In exposed regions such as the Atlantic margin, people may have preferred to live in the protected places instead of the open plains, uplands, and plateaus.

The western-most façade of Iberia, specifically Portuguese Estremadura, is characterized by coastal lowlands which abruptly end in the cliffs of the Estremadura Limestone Massif. Besides the overall severe environmental conditions, and regardless of the shore being further west at that time, both the lowlands and highlands were constantly exposed to strong and freezing winds from the Atlantic. However, this limestone massif is fractured by tectonics, and has several narrow canyons with caves and rock shelters that provide sheltered and comfortable conditions.

Here we present and discuss the set of published data and new data that seem to show the clustering of human occupations in karstic settings in detriment of the open areas, including inside of these valleys, during the LGM.

5 THEM VALLEY BONES: TAPHONOMIC HISTORY OF PLEISTOCENE ARCHAEOFAUNA AT ABRIGO DA BURACA DA MOIRA (CENTRAL PORTUGAL)

Abstract author(s): Paya, Alexandre (Instituto Politécnico de Tomar; CGeo – Centro de Geociências da Universidade de Coimbra) - Pereira, Telmo (C.E.U.-Cooperativa de Ensino Universitário; Instituto Politécnico de Tomar; CGeo – Centro de Geociências da Universidade de Coimbra; UNIARQ – Centro de Arqueologia da Universidade de Lisboa) - Detry, Cleia (UNIARQ – Centro de Arqueologia da Universidade de Lisboa) - Rossell, Jordi (IPHES – Institut Català de Paleocologia Humana i Evolució Social) - Monteiro, Patrícia (LARC – Laboratório de Arqueociências, Direção Geral do Património Cultural; ICArHEB – Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour, Universidade do Algarve) - Paixão, Eduardo (ICArHEB – Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour, Universidade do Algarve; TraCEr – Laboratory for Traceology and Controlled Experiments, MONREPOS – Archaeological Research Centre and Museum for Human Behavioural Evolution, RGZM; The Institute of Archaeology, The Hebrew University of Jerusalem) - Nora, David (ICArHEB – Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour, Universidade do Algarve; The Institute of Archaeology, The Hebrew University of Jerusalem) - Carvalho, Vânia (Museu de Leiria, Câmara Municipal de Leiria) - Holliday, Trenton (Tulane University; Centre for the Exploration of the Deep Human Journey, University of the Witwatersrand)

Abstract format: Oral

The Last Glacial Maximum brought long-term harsh climatic and environmental conditions. Hence, human groups had to adapt to such changes, which was done through the development of new technologies, shifting ecodynamics and settlement patterns. Buraca da Moira is a cave in Central Portugal with LGM human occupations in which faunal remains with different preservation conditions were recovered. The geomorphological setting of the site, in a valley sheltered from strong winds, with access to both lithic raw materials and fresh water, proves advantageous for Pleistocene human groups to settle in such places. This presentation focuses on the archaeofaunal assemblage recovered

from the layers associated to the LGM, and specifically its taphonomic history. Our results showed the diversity of fauna consumed between the Solutrean and the Gravettian, mainly red deer, and the anthropic activity on some specimens, such as cut marks, impact notches and burning, while carnivore activity was sparse. The conditions of deposition allowed for an overall good preservation of the remains, though carbonated concretions hinder analyses of the surfaces.

6 NEW DATA ON THE ACHEULEAN TECHNO-COMPLEX FROM THE LEFT BANK OF MINHO VALLEY (PORTUGAL)

Abstract author(s): Cunha-Ribeiro, João Pedro (University of Lisbon; Uniarq) - Monteiro-Rodrigues, Sérgio (Universidade do Porto; CITCEM) - Méndez-Quintas, Eduardo (Universidade de Vigo; GEAAT) - Santonja, Manuel (IDEA) - Gomes, Alberto (CEGOT) - Xavier, Pedro (Universidade do Minho; Lab2PT) - Ferreira, Carlos (Faculdade de Letras da Universidade de Lisboa) - Pérez-González, Alfredo (Universidad de Alcalá de Henares; IDEA)

Abstract format: Oral

Archaeological work carried out on the left bank of the Minho River (Portugal), since 2016, has allowed the identification of new Palaeolithic sites – Pedreiras 2 and Bela, in Monção, and Carvalhas, in Melgaço – generally associated with ancient river deposits, dating from the Middle Pleistocene (MIS 9/ MIS 8).

Their characteristic large cutting tools include different types of handaxes, most of them made from quartzite pebbles or wide flakes removed from large cores, cleavers and other artefacts such as cores and flakes, sometimes retouched.

In contrast to what occurs in southernmost river basins of the Iberian Atlantic Façade, where similar occupations are generally associated with high-energy depositional contexts, in the Minho valley such occupations are found often among fine deposits, related to flood phases.

In these cases, raw material sourcing for the production of lithic tools may have occurred away from the site, however not far. In small tributary basins of the Minho River the quartzite appears as an exogenous raw material, and always as knapped tools carried by humans.

In Carvalhas, one of the main sites, preliminary results suggest that the Acheulean implements are connected to an ancient river channel or meander, some of them carried from colluvia/slope deposit. Another assemblage, with a significant amount of flakes associated with a flood deposit, may date from a later period and may be related eventually to the Middle Palaeolithic (no dates available for this context).

These results, similar to those obtained in the right bank of the Minho River (Galicia, Spain), show abundance and diversity of the lithic assemblages, and attest to the human presence at the NW of Iberian Peninsula during the Middle Pleistocene.

7 ACHEULEAN OCCUPATION IN LIS VALLEY (PORTUGAL): THE CASAL DO AZEMEL SITE

Abstract author(s): Ferreira, Carlos (Faculdade de Letras da Universidade de Lisboa) - Cunha-Ribeiro, João (Faculdade de Letras da Universidade de Lisboa; UNIARQ – Centro de Arqueologia da Universidade de Lisboa) - Méndez-Quintas, Eduardo (Grupo de Estudos de Arqueología, Antigüidade e Território - GEAAT, University of Vigo)

Abstract format: Oral

Fluvial archives are key to understanding human behaviour in the Iberian Peninsula during the Middle Pleistocene and, specifically, to discuss the technological and chronological trends of the Iberian Acheulean techno-complex. Indeed, assemblages are mostly located in valley environments related to the main Atlantic regional rivers' basins, not only because they contain sedimentary archives that enhance the conservation of past human occupations' remains, but also due to the richness of these ecosystems.

In central Portugal, numerous Acheulean sites have been found in association to fluvial deposits in the hydrographic basin of the Lis River, and in some colluvial deposits that affect the top of formations that develop on adjacent plateaus. Among these, we highlight Casal do Azemel, a paradigmatic Large Flake Acheulean (LFA) site, with an assemblage composed of 3957 artefacts, in which the high presence of Large Cutting Tools (around 750) stands out. Despite the association of the remains with a colluvial deposit that locally affected the top of the Pliocene marine formation, their concentration in an area that does not stand out topographically from the surrounding flat surface, and the texture of the deposits that comprise them, are indicative of their anthropic origin. Given the pronounced eolisation of the artifacts, human occupation would take place during an important deflation phase and would have been seasonal since the location in a sandy plateau would only be possible in moments in which the scarcity of vegetation would allow human groups to benefit from the advantage of the control of a vast area. In this context, the production sequences identified at the site are the material evidence of a highly structured behaviour that would echo on other dimensions of these groups' dynamics, such as the ecodynamics of territorial exploitation, in which the lithic component would have played a key role.

THE ANTI-HABI TOOLKIT: PRACTICAL WORKSHOP ON SOLUTIONS AND MEASURES FOR PREVENTING AND ADDRESSING HARASSMENT, ASSAULT, BULLYING AND INTIMIDATION IN ARCHAEOLOGY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Coltofean-Arizancu, Laura (EAA Education, Training and Professional Development Advisory Committee; EAA Appeal and Anti-Harassment Committee; Archaeology and Gender in Europe Community of the EAA - AGE) - Hawkins, Kayt (Institute of Archaeology, University College London) - Hlad, Marta (Vrije Universiteit Brussel; Archaeology and Gender in Europe Community of the EAA -AGE)

Session format: Workshop

This workshop is the first in a series of training events that its organizers wish to host at future Annual Meetings of the European Association of Archaeologists (EAA). As a follow-up to the 2022 EAA session “The anti-HABI toolkit: Practical solutions and measures for preventing and addressing harassment, assault, bullying and intimidation in archaeology”, this collaborative, interactive workshop aims to provide practical steps to help prevent HABI occurring. As such it also builds on the many HABI-focused discussions, papers, sessions, publications, and measures that have taken place in recent years, initiated by both EAA members and other colleagues from across the archaeology sector.

The workshop will include:

- A short presentation on what constitutes HABI, its different forms, and its occurrence in European archaeology based on the latest surveys;
- An interactive training session in which workshop participants will learn to identify HABI and practice skills to safely use when witnessing HABI situations;
- A discussion in which workshop participants can ask questions about HABI, share their experiences of the training, and their feedback on it.

The workshop is organized under the aegis of the EAA’s Education, Training, and Professional Development Advisory Committee, its Appeal and Anti-Harassment Committee and its Archaeology and Gender in Europe Community, in collaboration with the British Archaeological Job Resource’s RESPECT Campaign.

The session is limited to 40 participants on a first come first serve basis. We understand individuals, particularly those who have experienced HABI, may wish to step out of the workshop at any point for a short period and a safe space will be made available.

UNDERSTANDING ISOSCAPES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Chala-Aldana, Dobereiner (University of Tübingen) - Valenzuela Suau, Lua (Universitat de les Illes Balears) - Maurer, Anne-France (Universidade de Évora) - Morell-Rovira, Berta (Institució Milà i Fontanals-CSIC) - Diaz-Zorita Bonilla, Marta (University of Tübingen)

Session format: Regular session

Isoscapes are one of the latest developments for the spatial analysis of geochemical and environmental variability in past mobility scenarios. They have become powerful tools for analysing the interaction between human groups, animals and their surrounding landscapes. The combination of Geographic Information Systems, Geochemistry, Archaeometry and Bioarchaeology poses methodological challenges expressed in publications that often show different strategies to elaborate these models. The main aim of this session is to share experiences, results and ideas that could help to find a common frame that integrates such strategies. It will also be an open forum to discuss methodological and theoretical aspects surrounding research designs, sampling strategies, environmental variables, new developments and publication standards on isoscapes models. We would like to welcome scientists using different isotope systems and dealing with similar archaeological questions when building isoscape maps to join the conversation, and to contribute in the generation of common frames for understanding isoscapes with regards to mobility studies.

1 CROWD-SOURCING ISOSCAPE DEVELOPMENT FOR MESOAMERICA THROUGH PUBLIC ENGAGEMENT

Abstract author(s): Buckley, Gina (University of Missouri Research Reactor; Universidade do Algrave) - Thakar, Heather (Texas A&M University) - De Leon, Jason (University of California) - García Hurtado, Maria Fernanda - Solís-Pichardo, Gabriela - Schaaf, Peter (Universidad Nacional Autónoma de México)

Abstract format: Oral

Isoscape development has reached a fever pitch among archaeologists. Part of this phenomenon can be attributed to the fact that sampling for these projects tends to be relatively easy to conduct without the need for significant manual labor or extensive permits. $^{87}\text{Sr}/^{86}\text{Sr}$ isoscapes for human mobility and migration studies have exploded in the last decade, particularly in Europe. Individual studies here generally concentrate within the political boundaries separating modern-day countries. However, prehistoric individuals, who are often the focus of these investigations, did not adhere to these borders. Additionally, isoscapes have potential forensic applications to identify modern-day, displaced individuals. This talk presents new efforts since 2022 to develop isoscapes for the combined region of Mexico and Central America (Guatemala and Belize south to Panama). This region was home to numerous and dynamic prehistoric cultural groups whose lives were interwoven through human mobility and economic relationships for thousands of years before Spanish Contact. However, the combined region constitutes nearly 2.5 million km², making the sampling of this area a huge undertaking. To tackle this large feat, international researchers, including the director of the Undocumented Migration Project, a group committed to identifying human remains of those who have perished attempting to cross the U.S.-Mexico border, have joined forces to create a publicly engaged study. The goal is to foster collaboration with “community scientists” consisting of local people who will be trained in environmental sample collection based on a grid-map system. Community-based sample collecting efforts are a robust avenue for public engagement and provide hands-on learning experiences for anyone interested in archaeological and environmental science. Sampling strategies and preliminary results from the 2022 and 2023 Mesoamerica Isoscape Project (MIP) field seasons will be presented along with future plans to expand this project.

2 THE INFLUENCE OF ALTITUDE AND RIVERS ON STRONTIUM ISOTOPE DATA - INSIGHTS FROM SLOVENIAN PLANTS

Abstract author(s): Gerritzen, Carina (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel) - Goderis, Steven (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel) - James, Hannah (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel) - Črešnar, Matija - Gruškovnjak, Luka - Leskovar, Tamara (Centre for interdisciplinary Research in Archaeology, Department of Archaeology, Faculty of Arts, University of Ljubljana) - Potočnik, Doris - Ogrinc, Nives (Department of Environmental Sciences, Jožef Stefan Institute) - Snoeck, Christophe (Analytical, Environmental & Geo-Chemistry Research Unit, Vrije Universiteit Brussel; Multidisciplinary Archaeological Research Institute, Vrije Universiteit Brussel)

Abstract format: Oral

The diverse landscape of Slovenia provides us with an excellent opportunity to understand and unravel more secrets from our bioavailable Sr dataset. While only a small country, the alpine mountains in the north, the karst plateaus in the southwest, and the vast glacier-fed river systems can make it challenging to create maps of bioavailable strontium in Slovenia. In our large-scale study, we use plant samples to examine how factors such as altitude and proximity to rivers influence Sr isotope data. Triple sampling of tree, shrub, and grass from 101 locations across Slovenia serve as the initial dataset. All samples were analyzed for stable ($\delta^{88}\text{Sr}$) and radiogenic ($^{87}\text{Sr}/^{86}\text{Sr}$) strontium isotopes. Strontium isotope data vary with weathering, which in most cases can be correlated to altitude and the proximity to water sources. In water-rich regions the correlation between Sr isotopic values and the bedrock becomes unclear, because of a large amount of Sr transport across geological boundaries. While mapping of bioavailable Sr in geographically diverse regions is challenging, our results in Slovenia provide a promising start framework towards creating complex isoscapes.

3 TOWARDS A BETTER APPLICATION OF ISOTOPE SAMPLING STRATEGIES: A PROPOSAL FOR DATA RECORDING THROUGHOUT GIS IN NE IBERIA

Abstract author(s): de la Fuente Seoane, Rubén (Universitat Autònoma de Barcelona) - Diaz-Zorita Bonilla, Marta (University of Tübingen) - Subirà, M. Eulàlia (Universitat Autònoma de Barcelona)

Abstract format: Oral

The current incorporation of isotopes analysis to estimate the mobility of human groups in archaeology is complemented by improvements in the sampling and their spatial representation. These two features are rapidly being incorporated into archaeological studies.

In this communication we would like to present the record and sampling methodology in strontium isotopes analyses ($^{87}\text{Sr}/^{86}\text{Sr}$) we have used in many archaeological sites in the NE of the Iberian Peninsula. On the one side, to explain the GIS tools we have applied for the sampling and the mapping, such as the QField. On the other side, the implementation of isoscapes to encourage the sharing of results and thus favour the spreading of data to the scientific community.

We present two cases study in which we want to determine the local isotopic print with aiming to interpret the main problems of these sites. First, we have two Iberic sites, Puig Castellar (Barcelona) and Ullastret (Girona), both of them are crucial to understand the practice of the nailed heads in the Iberic societies in this area. Secondly, we have the local strontium study we have develop in the medieval necropolis of Roquetas (Tàrraga, Lleida) where the historical records showed the arrival of Jews from other neighbouring settlements fleeing from an episode of pogrom anthropologically documented by us in Tàrraga.

Both cases, in addition to the differences in chronology, also differ in the way we have performed the sampling. The comparison of the data recording in two very distinct cases makes it possible to evaluate the reliability of the method.

4 WHICH FOODS ARE WHAT? PREDICTING PALEODIETARY PATTERNS AMONG ABORIGINALS OF THE CANARY ISLANDS AND THE PROBLEM OF BASELINES

Abstract author(s): Cuello del Pozo, Paloma (Texas A&M University)

Abstract format: Oral

Stable isotope analyses (SIA) of nitrogen ($\delta^{15}\text{N}$) and carbon ($\delta^{13}\text{C}$) are well-established predictors of ancient human mobility patterns in archaeology. Physical processes in the environment and within the chemistry of organisms cause changes between atomically heavy and light isotopes of elements in food sources. These shifts allow archaeologists to interpret diet preferences. For example, $\delta^{15}\text{N}$ relate to trophic level position and protein ingestion, and when contrasted against $\delta^{13}\text{C}$ values from the mineral and organic portions of bone and teeth, we can better predict diet origin. As long as archaeology has applied SIA, researchers have emphasized the need to supply dietary proxy measurements by creating localized baselines to help elucidate ancient human food menus. Regional isotope ecology directly influences interpretations of results because of this direct connection between humans and their environment via food and water intake. This communication emphasizes such requirements in the context of the archaeology of the Canary Islands where a great deal of information has been obtained from ethnohistoric sources. However, descriptions are constrained to the last epoch of pre-Hispanic aboriginal life and appear tainted by eurocentrism. Thus, we lack a diachronic understanding of subsistence patterns. In an effort to learn about economic practices and procurement strategies, this communication accounts for intraregional differences in insular paleodiets. By measuring $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ from ancient Canary human skeletons and incorporating her results to already-published isotopic data, the author proposes a mixed approach to economy where a generalized approach occurred at a regional context. Results from metadata analyses encourage future studies to further test the hypothesis that diet variability was observed based on ecozones in Gran Canaria and Tenerife islands. Finally, the author motivates archaeologists working in the region to start collecting $\delta^{13}\text{C}$ ratios from human and faunal bioapatite to attain a holistic approach to Canary insular paleodiets.

5 FROM IRELAND TO EUROPE – A DECADE OF MAPPING BIOLOGICALLY AVAILABLE STRONTIUM

Abstract author(s): Snoeck, Christophe - Gerritzen, Carina (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel, AMGC-WE-VUB; Multidisciplinary Archaeological Research Institute, Department of Art Sciences & Archaeology, Vrije Universiteit Brussel) - Sengeløv, Amanda (Research Unit: Anthropology and Human Genetics, Department of Biology of Organisms and Ecology, Université Libre de Bruxelles, CP192; Department of Archaeology, Ghent University) - Dalle, Sarah (Multidisciplinary Archaeological Research Institute, Department of Art Sciences & Archaeology, Vrije Universiteit Brussel; Department of Archaeology, Ghent University) - Capuzzo, Giacomo (Department of Humanities, University of Trento; Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel, AMGC-WE-VUB) - Salesse, Kevin (Department of Anthropology, Faculty of Science, Masaryk University) - James, Hannah (Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, Vrije Universiteit Brussel, AMGC-WE-VUB; Multidisciplinary Archaeological Research Institute, Department of Art Sciences & Archaeology, Vrije Universiteit Brussel)

Abstract format: Oral

Creating isoscapes of bioavailable strontium (BASr) are a time-consuming, labour-intensive, and expensive process. From my first solo sampling campaign in Ireland in 2012 to numerous team-sampling campaigns across Europe in 2022, our methodologies have significantly changed. Sampling strategies have improved and evolved thanks to the inclusion of experts from different fields, while sampling itself has been made much easier with the help of smartphones, digital maps and roaming. Plant processing has also changed from dry ashing to microwave digestion, allowing a much higher throughput needed for large scale BASr mapping. Different mapping methodologies have also been applied (from interpolation models and machine learning to domain mapping approaches) with pro's and con's.

This presentation highlights how these new methodologies and possibilities have shaped the current sampling strategies, plants processing, and mapping possibilities. It discusses how these are adapted depending on the research question(s) and area under study. It also provides some ideas for future work and collaboration with on-line open-access databases such as IsoArch.

666 PROSPECTING PREHISTORIC LAND USE AND ITS ENVIRONMENT: CHALLENGES AND PERSPECTIVES FOR INVESTIGATING LIFEWAYS OF HUNTER GATHERERS AND EARLY FARMERS [PAM; ARCHAEOLOGICAL PROSPECTION COMMUNITY]

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: De Smedt, Philippe (Department of Environment, Ghent University; Department of Archaeology, Ghent University) - Davis, Stephen (School of Archaeology, University College Dublin) - Koivisto, Satu (Archaeology, University of Turku) - Moucheron, Martin (School of Archaeology, University College Dublin; Irish Research Council)

Session format: Regular session

While advances in survey methods for studying past landscapes have been a boon, comprehensive approaches for mapping Stone Age land use remain challenging to design and implement. This is particularly true for more elusive aspects of such activity, such as settlement and occupation traces of Palaeolithic and Mesolithic hunter-gatherers. Often, this elusiveness is exacerbated by pedological and geographic configuration of study areas: peatlands and mountainous areas are notoriously challenging environments for identifying well-preserved remains. While offering more potential for more recent periods, limited preservation potential and shallow soils of dryland areas often result in a striking absence of these subtle traces of prehistoric land use.

The expanding archaeological prospection toolkit does, however, create new opportunities. By accounting for strengths and limitations of complementary survey methods, some recent, well-structured integrated approaches enable detailed palaeolandscape reconstructions, and can provide fine-grained site-specific insight into cultural activities. Still, such advances remain marginal and little integrated into general prehistoric archaeology, and development-led archaeological frameworks – with particular consequences for the Palaeolithic and Mesolithic. While available survey toolkits are promising, their implementation into daily field practice remains variable, restricting the potential of this archaeological resource. Although in some regions, fine-tuning prospection strategies has increased the quantity of informative Stone Age sites, in other areas this number has stagnated or – e.g., following intensified farming, forestry or drainage practices – deteriorated.

This session aims to bridge the gap between fundamental questions related to Palaeolithic to elusive types of Neolithic archaeology, and established and novel survey approaches. We consider archaeological prospection in its broadest sense: from non-invasive (e.g., remote sensing, geophysics, predictive modelling), to minimally (borehole, direct-push) and highly invasive (test pitting, trial trenching) methods, complemented with spatial sampling strategies

tailored to elusive prehistoric targets. Here, we particularly welcome contributions that present integrated survey approaches in challenging environments.

ABSTRACTS

1 CITIES UNDER CIRCLES: HIGHWAY FROM HUNTER-GATHERERS TO EARLY AGGLOMERATIONS

Abstract author(s): Kalafatic, Hrvoje (Institute of Archaeology) - Šošić Klindžić, Rajna (University of Zagreb) - Šiljeg, Bartul (Institute of Archaeology) - Meyer, Cornelius (CMprospection)

Abstract format: Oral

The Neolithic period saw a significant shift in human society as people transitioned from a hunter-gatherer lifestyle to a settled agrarian one. During this time, large complex settlements emerged in eastern Croatia, many of which had the characteristics of early cities. The proposed conference paper will present the results of a geomagnetic survey of large complex Neolithic enclosed settlements in Eastern Croatia. Some of these settlements have been the subject of ongoing archaeological investigation for several years. The geomagnetic survey, conducted using state-of-the-art equipment, has allowed for the creation of high-resolution subsurface maps of these sites. These maps, in turn, have provided valuable new information about the layout, size, and construction of the settlements, as well as offering insight into the social, economic, and political organization of the communities that lived there. The results of the survey indicate the presence of numerous structures and features, including large buildings, streets, and squares that support the interpretation of the settlements as early proto-urban agglomerations. Some of the structures obtained with remote sensing analysis predate large agglomerations and belong to earlier populations. The results of this research will be discussed in the context of current understanding of early urbanism and early Neolithic society in the region.

2 ILLUMINATING THRACE'S NEOLITHIC HABITATION WITH GEOPHYSICAL MAPPING

Abstract author(s): Sarris, Apostolos (Sylvia Ioannou Chair on Digital Humanities, University of Cyprus) - Papadopoulos, Nikos (Foundation for Research and Technology, Hellas) - Urem-Kotsou, Duska - Sgouropoulos, Kyriakos - Chysafakoglou, Periklis (Democritus University of Thrace)

Abstract format: Oral

Geophysical prospection was carried out in tandem with surface survey in a number of Neolithic settlements in the Aegean Thrace under the auspices of the Mapping the Early Farmers in Thrace (MAPFARM) project. The goal of the venture was to investigate a number of settlements in two geographical regions in Thrace (Xanthe and Rhodope) emphasizing the way of habitation of the region in terms of their intra-site organization and the relation of them with respect to their surrounding environs. Eight settlements in total (Yfantas, Krovili, Fanari, Diomideia, Lafrouda, Nea Santa, Myllon Manna and Paradimi), each one established at different environmental settings, were explored through the combination of multisensory magnetic survey, ground penetrating radar and EMI techniques, which covered more than 250,000 square meters of the terrain. Drone images were also used to create DEMs that were employed as background layers contributing towards the interpretation of the geophysical and conventional survey results.

The distribution of surface finds, normalized in terms of the surface visibility, complemented the results of the geophysical survey, which provided a more detailed image of the extension of the sites (a lot of which have been confined within ditches), their architectural relics (most of which consisting of residues of burnt daub-based structures and pits) and other features that expect further verification through excavation approaches. The particular results have confirmed previous test excavations in some of the sites and coring analysis.

3 DEVELOPER FUNDED ARCHAEOLOGICAL EVALUATION AND THE QUESTION OF PROSPECTING FOR LANDSCAPES: LESSONS FROM THE NM20 CORK TO LIMERICK PROJECT

Abstract author(s): Armstrong, Kayt (AOC Archaeology Group) - O'Keeffe, Paul (Transport Infrastructure Ireland) - Lawton, James - Cavers, Graeme - Sykes, Chris - Ovenden, Susan (AOC Archaeology Group)

Abstract format: Oral

This paper will demonstrate the potential of larger scale geophysical surveys carried out for archaeological evaluation in a developer-funded context; in particular large infrastructure projects, as a major contributor to the study of earlier prehistoric and palaeolithic landscapes. It will utilise the authors experience of large-scale surveys undertaken for developer led evaluation, particularly on linear infrastructure schemes. We will specifically reference a recent project undertaken in partnership with local government bodies and Transport and Infrastructure Ireland (TII) on the N/M20 Cork to Limerick project in the Republic of Ireland.

We will discuss the methodological approach developed in partnership with TII, which follows the recommendations arising from previous research into the efficacy of geophysical prospection on Irish Road schemes (Bonsall et al 2014). This has involved over 100ha of shallow (i.e., using 1m coil separation instruments) electromagnetic surveys

alongside more traditional magnetic gradiometry and twin probe earth resistance, in targeted locations along the already extensively prospected 80km road corridor. The benefits, challenges and results of this undertaking will be covered, followed by a discussion about the role developers and legislators can have in advancing archaeological scientific practice, and lessons learned for future partnerships. We will also explore the utility of legacy datasets collected for other purposes (near surface geophysics and airborne laser scanning) in the reconstruction of past landscapes and their exploitation by humans.

References:

- James Bonsall, Chris Gaffney & Ian Armit, (2014). Preparing for the future: A reappraisal of archaeo-geophysical surveying on Irish National Road Schemes 2001-2010. Archaeological Sciences Division of Archaeological, Geographical and Environmental Sciences University of Bradford

4 LOOKING UP FOR MESOLITHIC SITES IN MOUNTAIN LANDSCAPES IN EUROPE

Abstract author(s): Warren, Graeme - Butler, Micheal (University College Dublin) - Doughty, Alice (University of Maine) - Mann, Bruce (Aberdeenshire Council) - Moucheron, Martin - O'Brien, Cormac - Kelley, Sam (University College Dublin)

Abstract format: Oral

Mountains are a prominent feature of the European landscape and were settled in during the Mesolithic period across Europe. However, our knowledge of these post-glacial landscapes is fragmentary, with the majority of sites the result of chance finds. Mountain landscapes present challenges to archaeological survey and our baseline knowledge of site distribution is sometimes limited. As such, managing the archaeological resource in these landscapes is challenging. This is especially concerning because mountains are dynamic landscapes - with socio-economic and climate drivers causing significant landscape modification.

'Looking Up' (2021-2023, IRC Coalesce/2021/78) combines novel archaeological and geological data on a case study landscape in the Cairngorm mountains, Scotland - Britain's highest mountain landscape. This aims to contribute to our understanding of site distribution and, by working with stakeholders, directly contribute to the management of these archaeological landscapes. Looking Up uses geological and archaeological perspectives to develop models of areas of high potential for sites, integrating geochronological techniques, numerical modelling of ice cover, and archaeological simulation modelling. Small scale testing of these predictions is ongoing and includes a citizen science component. Working with stakeholders, the models will be used to inform the development of recommendation for the management and conservation of these mountain landscapes. We hope that this approach can be applied to similar mountain landscapes across Europe

5 AGRICULTURE IN THE CENTRAL PYRENEES DURING THE NEOLITHIC? A GIS-BASED MULTICRITERIA ANALYSIS FOR CROPPING ZONES

Abstract author(s): Salvador-Baiges, Guillem (High Mountain Archaeology Group, Departament of Prehistory, Universitat Autònoma de Barcelona) - Antolín, Ferran (Natural Sciences Division, German Archaeological Institute; IPNA/IPAS, Department of Environmental Sciences, University of Basel) - Gassiot-Balbè, Ermengol (High Mountain Archaeology Group, Departament of Prehistory, Universitat Autònoma de Barcelona)

Abstract format: Oral

Mountain areas, and in particular the Pyrenees, have historically been considered seasonal livestock areas. The arguments used have been that these locations were marginal areas to live in and to develop agriculture, much less for the first farming groups using the mountain range in the Neolithic period. Recent archaeological research in sites dating to the Neolithic period (5600-2300 B.C) has begun to change this vision. Systematic prospection has increased the number of archaeological sites known in the area, and researchers have begun to outline a shifting settlement pattern in the innermost area of the Central Pyrenees. Firstly, Early Neolithic sites, located at altitudes between 1000 m and 1700 m, show evidence related to year-round farming practices. Secondly, from 3500/3300 B.C. onwards, settlements begin to appear in the subalpine levels above 2000 m, associated with evidence related to livestock farming that might go along with occasional finds of cereal pollen and cereal polish in some lithic tools. Was agriculture indeed possible at different altitudes in mountain environments between the 6th and the 3rd millennia BC?

This paper presents a GIS-based multi-criteria analysis proposal to assess the suitability and possibility of land cultivation for cereals and leguminous crops (wheat, barley and peas) at the different altitudinal stages in the study area. The performed models are based on palaeoclimatic, topographic and soil variables, as well as the environmental requirements for the crops and their seasonality to obtain suitability maps for each period and to be related with the settlements.

6 CHILD'S PLAY AND RABBIT HOLE: SURVEYING TWO MESOLITHIC SHELL SITES ON THE EAST COAST OF IRELAND

Abstract author(s): Moucheron, Martin (UCD School of Archaeology)

Abstract format: Oral

If increasing the number of known early prehistoric sites is undisputedly a worthy survey objective, the limited resources allocated to research programmes and the tremendous impact of developer-led archaeology in Ireland suggest an alternative approach: applying integrated survey approaches to increase, refine, and question knowledge on existing sites. Indeed, in the past thirty years commercial archaeology has added a dramatic number of such elusive sites on the map, including some paradigm-shifting discoveries like that of an early Mesolithic burial site at Hermitage, Co. Limerick. However, their scope is quantitatively and qualitatively limited by their very nature – recording that which is being destroyed by development, with strict time and spatial constraints.

This paper will discuss the challenges and benefits of applying combined survey methods to known early prehistoric sites, by focusing on two late Mesolithic “middens” excavated in the 1940s and 50s on the east coast of Ireland. Their story illustrates the potential of archaeological prospection to (re)discover and (re)interpret sites that were excavated in the past – an archaeological retrospection.

A. PREDICTING AND PROTECTING LITHIC LANDSCAPES, DARTMOOR, UK

Abstract author(s): Stockley, Emma - Basell, Laura (University of Leicester) - Bray, Lee (Dartmoor National Park Authority) - Chapman, Henry (University of Birmingham)

Abstract format: Poster

The presence of lithic finds and scatters, sometimes situated within or below peat deposits, indicate significant activity on Dartmoor from the Mesolithic period onwards. This poster will summarise how Geographic Information Systems and non-invasive (predictive modelling) and invasive (test pitting) prospection methods are being employed to characterise the extent and significance of Dartmoor's prehistoric subsurface archaeology and predict areas of the moor where lithic scatters are most likely to be found.

Dartmoor covers 365 square miles and has the largest area of upland peatland in southern England. These ombrotrophic and minerotrophic peatland environments have potential for storing large quantities of carbon. In part, this is why Dartmoor is the focus of increasing numbers of landscape-scale conservation initiatives e.g., peatland restoration. Climate change is undoubtedly a key issue, but there is also a statutory responsibility to preserve and protect the National Park's heritage and archaeology.

A GIS predictive model was developed using parameters from Dartmoor's known lithic scatters. Randomly, and at locations identified by the predictive model, a programme of test pit excavations was undertaken. Data on the presence and nature of lithic finds was used to identify potential new sites and further enhance the model. This approach will support efforts to protect the rare traces of Britain's hunter-gatherers while still allowing Dartmoor National Park Authority to deliver programmes aimed at addressing the climate crisis.

B. MAGNETOMETER MAPPING OF BURIED LEVEE SYSTEMS AS A TOOL FOR PROSPECTING UNDERWATER PALEO LANDSCAPES

Abstract author(s): Huisman, Hans (University of Groningen) - Os, Bertil (Rijksdienst voor het cultureel erfgoed) - Dekkers, Mark (Utrecht University) - Brenk, Seger (Periplus research) - willemsse, Nico (RAAP) - Aalst, Warner (Utrecht University)

Abstract format: Poster

Submerged former inhabited coastal areas can contain a highly valuable archaeological record.

Such records are difficult to study and are threatened by recent increase in economic activities as wind parks and extraction of sand. Mapping of submerged geomorphological units and geology can help to establish the reconstruction of the past landscape and to infer human activities.

Here we present a novel way of using magnetometer surveys to characterize a buried Mesolithic/Neolithic landscape. Magnetometer maps, traditionally made for identifying unexploded ammunition and obstacles on the seafloor, were taken from the IJsselmeer area (Netherlands). These show patterns of paired linear features that resemble banks or levees that straddle channel-like features. Subbottom profile transects and sediment core analyses confirm that the observed linear features are formed during the Mesolithic and Neolithic period. They represent submerged and buried channel and bank/levee systems. These connect to known onshore buried channel systems from that period. Moreover, they can be identified and mapped in high detail. Palaeomagnetic research on the core samples reveal that the signal is caused by the formation of the mineral greigite during the first salt water intrusion in the investigated area. It

is clear that this makes it possible to indicate areas of particular high archaeological potential which, if threatened can be investigated in more detail by targeted drillings or other underwater excavation methods.

669 HOW TO MAKE GENDERS AND SEXUALITIES VISIBLE IN THE ANCIENT MEDITERRANEAN?

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Lo Monaco, Viviana (São Paulo State University - UNESP) - Figueira da Hora, Juliana (Universidade de Santo Amaro - UNISA) - Magalhães dos Santos, Juliana (University of São Paulo - USP) - Dolcetti, Francesca (Ca' Foscari University of Venice)

Session format: Regular session

In recent years we have witnessed an increasing interest of some scholars of antiquity in issues related to the representation of “minority” social groups, that is, portions of the population largely neglected by literary sources and classical archaeological production. The first studies on Antiquity were carried out focusing on the search, among the vestiges of material culture, of what were considered the principles of universal beauty and morality, and normally associated with the “normative” genders and their predetermined characteristics.

The reflections on gender issues, based on the analysis of decoloniality, allow us to observe the production of dominant discourses that hides multiple experiences of gender relations and representations of bodies from the point of view of critical thinking about historically marginalized people. In an attempt to build a critical and transdisciplinary thought that is materialized from representations and discourses of power we propose a broader and more decentralized analysis of materiality. It is possible to rethink the idea of a Mediterranean of human relations immersed in discussions that problematize the gender relations in everyday life in the synchronic and diachronic social sphere.

The session aims to present proposals and perspectives on how archeology can contribute to think about biological sexual differences between individuals, feminine, masculine, “non-normative” representations in different societies, the diversity of representations of the body, sexuality and desires on various material supports in the Ancient Mediterranean.

In this way, we wonder how Archeology can contribute to rethinking genders in ancient times from the decolonization of theoretical and methodological analysis that, especially from the 19th century, turned their interests to the Mediterranean.

We invite you to participate with contributions oriented towards the above issues and other similar ones, such as:

- Science and theory in the study of human remains
- Intersectionality
- Invisible people in the past
- Feminism in Archaeology

ABSTRACTS

1 WOMEN IN ANCIENT SICILY THROUGH THE EVIDENCE OF THE NECROPOLIS, FROM THE BRONZE AGE TO THE III CENTURY BC

Abstract author(s): Lo Monaco, Viviana (São Paulo State University)

Abstract format: Oral

We perfectly know that European written history was, mainly, a male history. Also, was the history of “winners”. In the context of the Ancient Mediterranean History, about non-Greek people and the relationship between them and Greek apoikoi we have few information coming from Greek textual sources. The Greek society was extremely masculine in its values, and the female component on rare occasions took part in the historical narrative. In the context of the “colonization”, this lack includes both Greek and non-Greek women, but it is important to address certain questions, even if the answers are not always easy to find or unanimous: How did the social role of the indigenous woman change with the arrival of the Hellenic groups? What role did Greek and indigenous women play in the transmission and preservation of the cultural traits of their groups of origin? Has the arrival of the Hellenic component radically changed the vision of being female within pre-existing societies?

Fortunately, Archaeology has compensated for the lacuna of written history, and archaeologists have been able to recover data especially from funerary contexts. This paper aims to show some examples of female burials, their contexts, and funerary goods from archaeological sites in Sicily. I choose to cover a large range of time (from Bronze Age to the III century BC) in order to observe the changes in representing the woman and her social role in a portion of Ancient Mediterranean through one of the most sacred moments of human life: death.

2 THE IDENTIFICATION OF TWO-SPIRIT PEOPLES USING OSTEOLOGICAL ANALYSIS, AND THE CONSEQUENCES OF EUROPEAN COLONIZATION FOR NATIVE AMERICAN PERCEPTIONS OF GENDER

Abstract author(s): Howard, Laura (University of Manchester)

Abstract format: Oral

When examining a non-Western culture's relationship with gender the possibility that that culture departed from the traditional binary western framework should be more than a footnote of interest. Rather, that culture's conception of gender should be central in all discussions of sexual difference within that culture. It is also important to recognise the impact of Eurocentric gender orders not simply on academic research, but on a culture's own understanding of personal identity. This study aims to determine the utility of archaeological methods in identifying historical evidence of Two-Spirit people amongst Native American communities. This will be achieved through the analysis of osteological remains, funerary practices and grave goods. This study also examines the effects of European colonization on current perceptions of the Two-Spirit's within Native American communities by collecting oral histories. These will then be compared to historical texts and the results of the funerary analysis, in order to gain an understanding of how gender systems have evolved since the pre-colonial era, and to evaluate the impact of colonization. This project aims to provide visibility and understanding of Two-Spirits in Native American communities, whilst questioning academic commitments to the western binary norms when researching these communities.

3 A GENDER STUDY IN TWO CONTRASTING TESTIMONIES: HERODOTUS AND MATERIAL CULTURE

Abstract author(s): Junqueira, Nathalia (Federal University of Mato Grosso Do Sul)

Abstract format: Oral

Aiming at the presentation of new possibilities in studying the women in the Classical Antiquity involving the discussions of the Cultural History, gender studies, identity and subjectivity of the historical subjects, we have chosen as a source of such presentation the work of Herodotus from Halicarnassus, the Greek historian, born in 484 BC, who who visited the lands of the pharaoh and wrote Histories in the fifth century B.C. Our intention is to analyze the selected passages in Book II in which the Egyptian women are presented in several situations, searching for evidences that this historian would support an ideal of a woman which could be part of the imaginary of a great deal of the Greek male population. Thus, we intend to demonstrate the way female behavior is represented in our sources and how varied feminist social practices could be present in the same imagined world for women in the ancient world.

4 EROTISM AND SEXUALITY IN APULIAN ICONOGRAPHY OF THE IV CENTURY A.C.

Abstract author(s): Santos, Juliana (University of São Paulo - USP; INCT Proprietas)

Abstract format: Oral

This presentation aims to analyze sexuality and its relation to eroticism from the iconographic perspective produced in Apulia from the fourth century BC. Far from Athens, the consumption of prestige artifacts was accompanied by a particular reading of the world, sociocultural interests in Attica and ended up in a way of consuming, interpreting and using the pieces in southern Italy. These conceptions also reflected in the artisanal production. As a result, a typical „way of doing“ of the region reflected the tension of sociocultural forces through political relations: on the one hand the sexual interests and performances expected by women and men, on the other, their personal interests. In this sense, we understand the role of Eros as a symbolic sexual element and as fundamental to translate the conception of gender expressed in the region. Through the images we will observe how this dialogue was constructed by examining and identifying the importance of eroticism and sexuality for this colonial region, and the relation of these conceptions to the Athenian one.

5 CERES, DIANA AND PROSPERITY IN COINS OF LIVIA AND AGRIPPINA THE YOUNGER

Abstract author(s): Pagoto Bélo, Tais (University of São Paulo; Université Libre de Bruxelles)

Abstract format: Oral

This presentation will aim to explain the monetary iconography of two of the most important empresses of the Roman Empire: Livia and Agrippina the Younger.

Livia, who was Augustus' wife, has an extensive monetary iconography, interspersed with personifications linked to goddesses associated with prosperity, fertility, procreation and abundance, such as Ceres/Demeter among others, such as Vesta/Hestia and Juno/Hera. Her coins are listed by legends that denominate her as Mater Patriae, Diva Augusta and even Genetrix Orbis, confirming her connection with fertility and sanctioning her characteristics of the ideal Roman matron.

Agrippina the Younger, daughter of Agrippina the Elder and Germanicus, was married to Claudius and was the mother of Nero. During her life she seems to have aimed to follow in Livia's footsteps, as "Augusta" and priestess of her divinized husband. She appears in monetary iconography with elements of Ceres, such as the crown of corn cobs; and mainly linked to Diana, with the representation of the goddess herself on her coins, and/or with her elements, such as the crescent moon, quiver, arrow, bow and torch, as well as elements linked to prosperity like those of Livia.

The comparison of the iconography of these two Roman women will aim to conclude their identity links with the goddesses and the gender strategies constructed for their coinage. Consequently, it will be highlighted how these women were represented in such objects, once their reproductions should have been elaborated to send appropriate messages to the public, in view of the governmental interests of power dispute and gender.

6 INTERSECTIONALITY AND MASCULINE IDENTITIES IN ARCHAIC ETRURIA

Abstract author(s): O'Donoghue, Eoin (Brandeis University)

Abstract format: Oral

This paper will consider the construction and representation of masculine identities in Etruria and northern Latium during the Archaic period (c. 560 – 480 BCE). It is argued that Archaic central Italic society operated via a complex system of social and gender inequalities that

revolved around the authority of groups of élite men. This system was maintained through the public and private performance of specific élite male activities and rituals and the consequent subjugation of non-élites. It is shown that a core component of central Italic society was the corresponding high status of élite women within this social framework, which complemented the status of élite men and provided élite women with considerable power and an elevated social status. This social framework draws on Raewyn Connell's model of hegemonic masculinities and Kimberlé Williams Crenshaw's ideas relating to intersectionality. The evidence for this derives from a study of burial assemblages and iconographic representations. It includes the examination of gendered burials viz. Archaic period burial

data associated with four settlements: Chiusi, Crustumerium, Satricum, and Veii. These are compared with the representation of gendered figural representations from tomb-paintings in Tarquinia and funerary reliefs from Chiusi, which in turn are contrasted with the public presentation of figural scenes on architectural terracottas from buildings from throughout central Italy.

670 NEOLITHIZATION OF THE MEDITERRANEAN: INTEGRATED APPROACHES TO OLD QUESTIONS

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Nafplioti, Argyro (Ancient DNA Lab, Institute of Molecular Biology & Biotechnology - IMBB, Foundation for Research and Technology - Hellas - FORTH) - Atakuman, Çiğdem (Department of Archaeometry, Middle East Technical University - METU) - Somel, Mehmet (Department of Biological Sciences: Biology/Molecular Biology and Genetics, Middle East Technical University - METU) - Carter, Tristan (Department of Anthropology, McMaster University)

Session format: Session with keynote presentation and discussion

The spread of Neolithic lifeways, farming and herding, from the Middle East and Anatolia to the rest of the Mediterranean and Europe approximately 9 thousand years ago is a complex landmark event in the history of humankind that so far has been understood only in broad strokes.

Despite the extensive scholarship on the subject that includes studies of material culture, settlement, linguistic, archaeozoological, archaeobotanical, biogeochemistry and archeogenetic data offering explanations about the processes involved, major questions remain concerning the specifics of demographic and cultural change, and chronology. Where population movement has been invoked to interpret change and cultural discontinuity, movements tend to have been simply identified as events, rather than further investigated as to the size, composition or organisation of the migrant groups, the motivation and consequences for all social groups involved, i.e. the people moving, the receiving communities as well as those staying behind.

This session therefore aims to shed new light on the Neolithic expansion through the Mediterranean in this context by studying population changes in detail and linking it to changes in material culture, language, lifeways and the socio-economic organisation of the populations involved, within a clear chronological framework. To this end we invite proposals for papers on this topic from a broad array of disciplines including archaeology, bioarchaeology, archaeogenetics, biogeochemistry, archaeodating, and linguistics.

1 TIME AND ITS PERCEPTION(S) IN ARCHAEOLOGICAL DISCOURSES: THE CASE OF THE NEOLITHISATION PROCESS OF THE CIRCUM-AEGEAN SPHERE

Abstract author(s): Reingruber, Agathe (Freie Universität Berlin)

Abstract format: Oral

The perception of past time and the determination of time spans are among the great challenges of prehistoric analyses. They contribute significantly to the understanding and interpretation of transformations: How fast or how slow did they occur, and how can we determine their duration and explain their rhythmicity? These questions are far from banal, as different perceptions of time lead to sometimes contradicting ways of explaining change.

In my presentation, I will address two different perspectives relying on examples from the circum-Aegean region at the transition from the Mesolithic to the Neolithic:

- the perception of time based on relative chronological appraisals obtained from ceramic analysis and the presumed speed of stylistic changes, and/or from stratigraphic deposits and the presumed duration of single levels;
- the perception of time resulting from the interpretation of radiocarbon data, either without or with the help of statistical (Bayesian) models.

In doing so, I will turn to the vexing question of how much weight can be attributed to single radiocarbon dates and which dates must be excluded from the discussion as outliers: A strict evaluation of the results leads to a rather short chronology, while a more tolerant interpretation adds to an extended chronological appraisal.

2 BUILDING CASTLES ON SAND: CURRENT MODELS ON THE IMPACT OF INSULAR AEGEAN HUNTER-GATHERER POPULATIONS ON NEOLITHISATION PROCESSES

Abstract author(s): Carter, Tristan (McMaster University)

Abstract format: Oral

Excavation and survey over the past 15 years in the insular Aegean and western Anatolian littoral has provided a wealth of Mesolithic sites, requiring us to rework long-held models concerning the cultural history of Mediterranean islands (Cherry, PPS 1981). With demic diffusion now widely accepted as the “inescapable hypothesis” (C. Perlès) to explain the introduction of Neolithic lifeways into continental Greece, and Crete in the earlier 7th millennium cal. BC, these Mesolithic populations are now being rightly forefronted in discussions of Neolithisation processes. Given that these hunter-gatherers were occupying those intermediary islands via which migrating farming populations would have tramped as they voyaged westward out of Anatolia (and/or Cyprus), can we talk of an indigenous input to these processes? Might common use of Melian obsidian by insular Aegean hunter-gatherers and western Anatolian farmers provide us with a context where knowledge of safe sea routes and islandscapes were apprehended by the latter group prior to their migration? Do we conceive of interaction, inter-marriage, and creolised communities, or do we envisage a complete demographic replacement, and a depopulation in most Aegean islands during the Early Neolithic due to their lacking the environments favoured by cattle raising villagers (with the possible exceptions of Naxos, and Rhodes)?

While much ink has been spilled pondering these possible relations, we fear that these models are based on flimsy evidence, with huge gaps in our knowledge concerning the absolute chronology, demographics, and seasonality of these Mesolithic sites. This paper critically reflects the archaeological data, taking a minimalistic perspective, arguing that – as with recent demands for ‘gold standard’ evidence for alleged Palaeolithic activity in the Aegean basin – our energies need to be spent in excavating and dating these sites, with survey data of insufficient quality to provide the evidential bases for many of the current debates.

3 WHAT DO ARCHAEOLOGICAL AND GENETIC DATA TELL US ABOUT THE DISPERSAL AND INTERBREEDING BEHAVIOUR OF EARLY MEDITERRANEAN FARMERS?

Abstract author(s): Fort, Joaquim (Universitat de Girona)

Abstract format: Oral

Recently, a database with 215 early Neolithic dates the western Mediterranean has been gathered, and it has been used to infer that the Neolithic spread rate was much faster than inland and that this implies displacements per generation of hundreds of kilometers and an importance of 0–21% for cultural diffusion, compared to 79–100% for demic diffusion [1]. A comparable study for the eastern Mediterranean could be very important in the context of possible general laws of Neolithic spread [2], but it would require an archaeological database similar to that recently gathered for the western Mediterranean [1]. On the other hand, the genetic cline of mitochondrial haplogroup K in early Ne-

olithic individuals [3] leads to more precise estimations of the importance of cultural and demic diffusion, and it also makes it possible to estimate the percentage of early Neolithic individuals who interbred with hunter-gatherers [4].

[1] Fort J, Dispersal distances and cultural effects in the spread of the Neolithic along the northern Mediterranean coast, *Archaeol. Anthropol. Sci.* 14, 153 (2022).

[2] Fort J, The spread of agriculture: quantitative laws in prehistory? In *Simulating Transitions to Agriculture in Prehistory*, ed. S Pardo-Gordó and S M Bergin (Springer, Berlin, 2021).

[3] Isern N, Fort J, de Rioja V L, The ancient cline of haplogroup K implies that the Neolithic transition in Europe was mainly demic, *Sci. Rep.* 7, 11229 (2017).

[4] Fort J Prehistoric spread rates and genetic clines *Hum. Popul. Genet. Genom.* 2, 0003, 1-36 (2022).

4 THE NEOLITHIZATION OF THE NORTHEASTERN BLACK SEA REGION

Abstract author(s): Valery, Manko (Institute of Archaeology of NAS of Ukraine)

Abstract format: Oral

The process of Neolithization of the North-Eastern Black Sea region is associated with the development of the Kobuletian Culture.

The Kobuletian Culture emerged at the turn of the 10th-9th millennia B.C. in West Georgia and developed to the VII millennia B.C. Kobuletian sites were found in the mountain gorges of Javakheti, Adjara, Guria, and the Central Caucasus. The main sites are Kobuleti, Khutsubani, Kvirike, Bavra, Bavra-Ablari (Layer IV), Darkveti (Layer V), and Sosruko (Layers M-2 and M-1).

The features of the Culture are the usage of hand-pressing technique and the presence of bullet-like cores, backed blades and bladelets, oblique truncated faceted blades, bilateral burins, scrapers on flakes in complexes.

There are two complexes with faunal remains (Bavra-Ablari, Layer IV and Darkveti, Layer V), which contain bones of wild deer and bull. First experiments with pottery making began at the turn of the 8th-7th millennia B.C. Kobuletian Culture transformed to Neolithic Odishi Culture just in the beginning of VI millennium BP, when traces of farming were fixed.

The origin of Kobuleti Culture connected with the M'lefaatian of Middle East. The migration of carriers of M'lefaatian relates with the beginning of Holocene with the warming and a better climate situation in Black Sea Coast. Carriers of M'lefaatian inhabited the empty territory in conditions of absence of competition.

The migration of M'lefaatian population took place in a time when farming had not been practiced yet at Middle East. The relations between two groups of cognate population led to the appearance of pottery, weaving and farming husbandry. So, we can trace the model of Neolithization, when process was ensured by the early migration of the population, which was only on the threshold of Neolithization. The subsequent Neolithization of the North-Eastern Black Sea region was associated with the preservation of ties with the parent territory.

5 VIOLENCE IN THE NEOLITHIC NEAR EAST: FACT OR FICTION?

Abstract author(s): Erdal, Yilmaz Selim (Department of Anthropology, Hacettepe University; Hacettepe University Skeletal Biology Laboratory - Husbio_L)

Abstract format: Oral

There are different views about whether Neolithization, which is characterized by the transition to permanent settlements, and domestication of animals, cereals, and legumes, increased interpersonal violence. Some scholars propose that the Neolithization process contributed to increased interpersonal violence including warfare and feuding. Yet, the limited number of studies on human remains in the Near East did not provide sufficient evidence in early Neolithic sites. In recent years, human remains from Anatolia, which have been examined with different approaches, allowed us to explore this issue by taking into account different stages of Neolithization. Early Neolithic sites had a high frequency of skeletal traumas only a few of which seemed fatal. More than one-third of the early Neolithic people had healed depressed cranial traumas. However, Late Neolithic and Early Bronze Age sites have more frequent signs of fatal combat. We propose that the spread of fully domesticated lifeways in marginal zones, new homelands, and the meeting of Mesolithic/Epipalaeolithic locals and farmers, led to more fatal encounters and violent death becoming more visible. It seems that the centralized political and economic system that emerged during the Bronze Age also controlled and organized violence.

6 EARLY SETTLERS ON THE MALTESE ISLANDS: AN ISOTOPIC INVESTIGATION OF DIET, PROVENANCE AND RESIDENTIAL MOBILITY

Abstract author(s): Nafplioti, Argyro (Institute of Molecular Biology & Biotechnology, Foundation for Research and Technology - Hellas - IMBB-FORTH) - McLaughlin, Rowan - Malone, Caroline (School of Natural and Built Environment, Queen's University Belfast) - O'Connell, Tamsin - Stoddart, Simon (McDonald Institute for Archaeological Research, University of Cambridge)

Abstract format: Oral

This paper investigates diet, provenance, migration and residential mobility in relation to early settlers on the Maltese islands. Multi-isotope (carbon, nitrogen, oxygen and strontium) ratio analysis of the remains of the people themselves from the mortuary contexts at Xagħra and Xemxija, carried out for the first time in the Maltese islands by the FRAGSUS project, explore the above issues.

Current evidence points to a purposive Neolithic colonization of the islands. Covering a total surface area of 316Km², it appears that the earliest period when the islands would have offered a viable landmass for human permanent occupation would have been the Neolithic with the onset of agriculture. These newcomers are generally considered to be the first settlers. In this context, carbon and nitrogen isotope ratio data presentation and discussion focuses on understanding what nourished the ancient residents of the Maltese islands, on interpreting evidence for dietary variation and on elucidating the relationship between the remarkable prehistoric cultures of these islands and the landscape upon which human life depended. Oxygen and strontium isotope ratio signatures of human teeth from the above two sites are assessed with a view to reconstructing geographical origins and tracking residential change for the people analysed, while specific hypotheses for contact and mobility within the Maltese islands, as well as between the latter and the rest of the Mediterranean are being addressed.

7 POPULATION DYNAMICS DURING THE NEOLITHIZATION OF WEST ANATOLIA

Abstract author(s): Somel, Mehmet - Koptekin, Dilek (Middle East Technical University) - Aydoğan, Ayça (Hacettepe University) - Kazancı, Duygu Deniz (Middle East Technical University) - Özer, Füsün - Altınışık, Ezgi - Erdal, Yılmaz Selim (Hacettepe University) - Atakuman, Çiğdem - Karamurat, Cansu (Middle East Technical University)

Abstract format: Oral

The population dynamics behind the emergence of Neolithic villages in West Anatolia between 7000-6000 BCE have remained contentious. Based on material culture analyses, the Levant and Central Anatolia had been suggested as potential sources of population movement into West Anatolia. Meanwhile, results of previous genetic analyses have raised the possibility of local Mesolithic groups contributing to Neolithic populations, or potential admixture from Balkan Mesolithic-related groups to West Anatolians. Here we analyse and present published and unpublished genomic data in relation to the spread of Neolithic settlements. The evidence suggests the presence of a local population in West Anatolia before 7000 BCE that was genetically related to Pre-Pottery Neolithic Central Anatolia, but less affected by eastern gene flow than Central Anatolians. In the period following 7000 BCE, i.e. the Pottery Neolithic, the genetic profiles of West Anatolian Neolithic populations were again similar to contemporaneous Central Anatolians, suggesting migration from Central Anatolia and/or North Mesopotamia. However, we also infer that the West Anatolian Pottery Neolithic groups may have carried ancestry from local West Anatolian populations, and were thus likely admixed. We further observe inter-site and intra-site heterogeneity in genetic ancestry in the Marmara region, where we have the most comprehensive genomic sample from West Anatolia.

8 LIFEWAYS AND HUMAN ADAPTATION AT THE TRANSITION TO AGRICULTURE IN THE CENTRAL MEDITERRANEAN: AN INTEGRATED BIOARCHAEOLOGICAL APPROACH

Abstract author(s): Parkinson, Eóin (Queen's University Belfast)

Abstract format: Oral

The advent of farming is among the most important chapters in the human story. The impact of this process on the human body has a long history of study, but systematic large-scale studies are lacking for Mediterranean Europe. However, recent advancements in archaeological science and multi-disciplinary 'big data' approaches now make it possible to draw together and cross-analyse multiple strands of bioarchaeological evidence, enabling new and detailed understandings of Neolithic 'lifeways'. This contribution explores the long-term biological trajectories of human societies across the transition to agriculture in the central Mediterranean c. 8000 years ago through an integrated approach that examines archaeological and bioarchaeological data related to skeletal growth, population dynamics, habitual behaviour and diet. Utilising datasets of skeletal measurements from 389 individuals, dietary stable isotope data from 1787 individuals and 5714 radiocarbon dates, the results demonstrate the close interplay between demographic change, human health and nutrition and lifestyle. Moreover, the data is presented and analysed on a continuous timescale, enabling high a chronological resolution and unique insights into the first farming communities in

the central Mediterranean. The results are interpreted here within a broader evolutionary context, and promote the importance of multi-method and integrated approaches in bioarchaeology.

9 TRANSFORMATIONS OF GENOMES AND CULTURES DURING THE NEOLITHIC IN WESTERN EUROPE

Abstract author(s): Geigl, Eva-Maria (Université Paris-Clté, CNRS, Institut Jacques Monod)

Abstract format: Oral

The analysis of ancient genomes revealed that the Neolithic lifestyle known and defined through archaeological evidence expanded into in western Europe through migrating populations. They originated in the Eastern Mediterranean and spread to the west using two different dispersal routes, one across the continent and one across the Mediterranean. These paleogenomic studies linked in broad strokes material culture and genomes. At the end of the Neolithic, the emergence of the archaeological culture of the corded ware complex has been shown, again in broad strokes, to coincide with the arrival in central Europe of migrants from the eastern European steppes. These results represent a large frame that needs to be filled with results from fine-scale, regional studies in a jigsaw-like fashion. It is the aim of this presentation to provide both the frame and some of the puzzle pieces that begin to refine our view of the biological mechanisms behind the social processes associated with the interactions, emergence and replacement of cultures in western Europe

10 PHYLOGENY OF THE INDO-EUROPEAN LANGUAGES: STATE OF THE ART

Abstract author(s): Kassian, Alexei (-)

Abstract format: Oral

This is a keynote lecture on linguistics in the session entitled 'Neolithization of the Mediterranean: Integrated Approaches to Old Questions':

After a very brief overview of the history of research on IE phylogeny, the recently proposed IE tree (Kassian et al. 2021 <https://doi.org/10.1515/ling-2020-0060>) will be discussed. In this paper, we apply reasonably formal techniques of linguistic data collection and post-processing that have been recently proposed by our team. We use sequential phylogenetic workflow and obtain a consensus tree based on several computational algorithms. Probably for the first time in IE studies, the resulting tree topology and datings are entirely compatible with established expert views. Further discussion will be devoted to some common problems of computational approach to language phylogeny (e.g., why computational tree usually contradicts our previous knowledge and established expert views) and how to combine the traditional linguistic and philological methods with modern computational algorithms to obtain consistent and reliable genealogical classifications of the world's languages.

671 ROCK ART, LANDSCAPE, AND SETTLEMENTS - STUDY OF CONTEXT AND PLACEMENT

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Palonka, Radoslaw (Institute of Archaeology, Jagiellonian University in Krakow; Crow Canyon Archaeological Center) - Medici, Paolo (Centro Camuno di Studi Preistorici) - Polkowski, Paweł (Archaeological Museum in Poznan)

Session format: Regular session

To enhance our comprehension of human past cultures it becomes essential to take into consideration all the possible archaeological data, among which rock art (and an in-depth analysis of it) is acquiring a new importance. In particular, in those areas where archaeological remains are scarce and rock art is one of the few (or only) evidence of human presence. It is especially important where the environment makes it hard to preserve the traces of a given culture (high mountain or rocky areas), or where the natural processes have destroyed them (i.e., floods, earthquakes). Then the panels with paintings (pictographs) and petroglyphs can be the main carriers of information about the presence of people in a particular place, its chronology, demographics, migrations, and cultural transformations.

This session emphasizes the study of rock art in the context of its relationship to human settlements and the surrounding terrain, including water bodies, mountain peaks, and other landscape features and elements of the natural environment. All these elements often formed a certain coherent whole in ancient and historic human cultures, also constituting elements of the so-called sacred landscape. Aspects of the analysis of rock art in the context of showing its dynamic character and role as an important element of the landscape will also be raised.

Today, a more comprehensive understanding of rock art and its relation to settlement and landscape is possible with the extensive use of digital methods of documentation and spatial analysis including Geographic Information System/GIS as well as subsequent analysis and visualisation (including virtual) of rock art. The application of digital methods

as well as theoretical approaches of rock art in the context of landscape-settlement features are also welcomed in this session. We invite papers that deal with the landscape context of rock art from prehistoric and historic cultures in Europe and other parts of the world.

ABSTRACTS

1 INTRODUCTION - ROCK ART, LANDSCAPE, AND SETTLEMENTS - STUDY OF CONTEXT AND PLACEMENT

Abstract author(s): Medici, Paolo (Centro Camuno di Studi Preistorici) - Palonka, Radoslaw (Institute of Archaeology, Jagiellonian University in Krakow; Crow Canyon Archaeological Center) - Polkowski, Paweł (Archaeological Museum in Poznan)

Abstract format: Oral

In many places around the world the rate of survival of archaeological remains can be low due to the presence of specific environmental conditions as well as various natural processes and events. It happens that the only available evidence of human presence is rock art. In such cases, paintings and petroglyphs may become essential for our comprehension of past human activities in the given areas. Rock art images become then the indexes of people's presence in these places, providing potential knowledge of chronology, demographics, migrations, religious activities, and cultural transformations.

Often, the study of rock art can be, however, carried out in the context of its relationships to settlements and other preserved archaeological remains; the entire landscape with its features may have been a crucial element of ancient and historic landscapes. Recent researches analyse rock art in its context as a dynamic and important component of the landscape. A more comprehensive understanding of the relation with settlement and landscape is now possible, for instance, with the use of digital methods of documentation and spatial analyses including Geographic Information Systems, as well as subsequent various modes of rock art visualization.

In this session, we wish to put a particular stress on the relationships between rock art assemblages and settlements. This appears as one of the ways to go beyond the question of pure representation, i.e., of what rock art depicts, and to orient research towards the question of what rock art does. Such a view can help appreciate not only functional aspects of rock art, but also – or perhaps especially – its potential agency or power in maintaining or altering past social realms. In this introduction to the session, the authors will present their thoughts on approaching rock art-settlements relationships by referring to examples from prehistoric and historic contexts.

2 SCALES OF SACRED LANDSCAPE - REVISITING THE ROCK ART AT THE SLEEPING GIANT OF ASTUVANSALMI, SOUTHEASTERN FINLAND

Abstract author(s): Lahelma, Antti (University of Helsinki) - Gjerde, Jan Magne (NIKU - Norwegian Institute for Cultural Heritage Research)

Abstract format: Oral

Astuvansalmi is one of the most intriguing rock art sites in northern Europe, but remains comparatively little known outside Finland's borders. It features one of the largest concentrations of open-air rock paintings in the region, including elk, anthropomorphs, boats, handprints, paw-prints, a bird and line figures. Several of the figures are clearly interacting, appearing as scenes. A new documentation of the site reveals details and figures not previously documented and suggest that there are more than 80 figures.

Excavations carried out in front of the cliff have uncovered arrowpoints and amber pendants, the latter found under water. The finds in front of the cliff and in the lake beneath have been interpreted either as depositions and/or offerings. Based on the excavations (diagnostic artefacts) and shoreline dating, the site can be dated from the Neolithic and to the Early Metal Period (ca. 4000–2200 BCE).

The main body of the rock art is placed on a section of the cliff shaped by a large pothole. The massive cliff sculpted by nature has the appearance of a giant human head that observes passers-by moving through the lakescape by boat or walking on frozen lakes during winter. This effect has been accentuated by the exceptional acoustic qualities of the curved cliff. Rock art at anthropomorphic cliffs is found at several places in Fennoscandia, yet Astuvansalmi is perhaps the most prominent example of this phenomenon. The geomorphology of the site makes us suggest that nature and culture were intertwined in the landscape of the past at Astuvansalmi. Revisiting Astuvansalmi, we examine the paintings, the geomorphology of the site, the labyrinthine landscape of lakes and islands, and the contemporary archaeological sites and finds found in said landscape, in order to shed new light into a classic site and its landscape context.

3 **MARINE ENVIRONMENTS OF THE RED OCHRE CLIFF PAINTINGS IN FINLAND: CHRONOLOGY, CONTINUITY AND CHANGE**

Abstract author(s): Niskanen, Karen (University of Oulu)

Abstract format: Oral

Post-glacial rebound in Finland resulted in isostatic land uplift, a process that continues today. In the inland lake area, resplendent with red ochre pictographs, the resulting tilt of the earth's crust affected the ancient marine landscape and water routes. Around 6,000 years ago, the water above the Salpausselkä ridge burst and the River Vuoksi was formed and there was an estimated four-metre decrease in the water level of Ancient Lake Saimaa. Many painting sites, once situated on islands, are now found on peninsulas or on the mainland. Besides the cliff paintings above the lakes, there are also paintings on boulders near the shores. These momentous, observable environmental changes necessitated adaptation and innovation for the residents.

According to Seitsonen (2005), painting of the pictographs in this area occurred over 5 periods between 4000 Cal BC-1800 Cal BC, from the Early Comb Ware, (CW1) period to the Early Metal Period. Though most sites have only a single image, superimpositions and multi-horizon paintings suggest some sites were in use or re-use for up to 5 periods. Seitsonen presents a typology attributing differing motifs to the different horizons.

This research relies on site catchment analysis and nearest neighbour analysis using ArcMap 10.7.1. Databases include archaeological sites and finds recorded by the Finnish Heritage Agency, estimated dates provided by recent shoreline chronology research and data from the National Land Survey of Finland. The aim is to establish site distribution and chronology of pictograph sites and settlement patterns along the ancient waterways.

References:

- Seitsonen, O. 2005. Shoreline displacement chronology of rock paintings at Lake Saimaa, eastern Finland. *Before Farming: the archaeology and anthropology of hunter-gatherers* 1, 1-21.

4 **FOPPE DI NADRO: FROM THE SCENE TO THE CONTEXT**

Abstract author(s): Galvaldo, Silvana - Medici, Paolo - Gastaldi, Cristina (Centro Camuno di Studi Preistorici)

Abstract format: Oral

The paper submits some achievements about last research on rock art in Foppe di Nadro (Valcamonica – Italy), from Late Neolithic to Iron age. The Authors try to enhance the possible interrelation between rock art and landscape context, not only regarding the different chronological phases, but also the relations among rock art, landscape, and environment.

The chronological distribution pattern of the engravings allows us to recognize a different view on landmarks, such as water streams, clearings, panoramic viewpoints, cliffs. This analysis could lead us also to a hypothetical reconstruction of ancient trails and settlements.

For example, during the Copper Age phase, the monumental area around rock 30 seems to have been the focal centre of a complex, with a clearing right before the engraved boulder and a little stream flowing that passed by some engraved surfaces.

Significant and decisive has been also the modern technical approach, integrating and updating traditional research with new methodologies: 3D rendering, digitization, GIS, integrated databases, and others. In particular, the integral documentation of the scenes and the attention towards the context allow a better understanding of dispositions and chronologies of the engraved subjects. The access to complete data, integrated with new methodologies, also permits significant thematic insights, even regarding topography.

Thus, the rock art site in Foppe di Nadro offers the possibility to demonstrate how an integrated approach on the engravings, the context and the digital data is fundamental to fully understand a site.

5 **BETWEEN THE SETTLEMENTS: ROCK ART ALONG THE ROUTES OF THE DAKHLEH OASIS, EGYPT**

Abstract author(s): Polkowski, Pawel (Poznan Archaeological Museum)

Abstract format: Oral

Dakhleh is one of several grand oases in the Western Desert of Egypt. Colonised by the ancient Egyptians in the middle of the third millennium BC, it became a remote province of the kingdom – separated from the Nile valley by a three-hundred kilometres stretch of barren land. Egyptians brought with them knowledge and technology, created farmlands and founded settlements. They also 'imported' their own specific rock art and rock inscriptions, which became one of the ways of taming the landscape still inhabited by indigenous pastoralist communities at that time.

Petroglyphs became a common feature of the Dynastic-period Dakhleh landscape; however, not attested in or near settlements, but rather in the oasis' margins. Significant concentrations of dynastic petroglyphs are known from the areas cut by major routes: Darb el-Tawil in the north, Abu Ballas Trail in the south, and Darb el-Ghubari in the east. Moreover, certain smaller local routes are also known for their large quantities of rock images.

In this paper, I firstly intend to briefly characterise types of rock art attested in these marginal sectors of the oasis in order to distinguish major groups of motifs associated with routes and movement. Further, I discuss the potential relationships between the oasis margins and the major dynastic settlements. By focusing on the selected motifs, such as depictions of divinities, I hypothesise that pharaonic rock art was more a feature of movement to and from Dakhleh, than a feature related to the oasis' interior – a far more settled and organised area. In other words, rock art would be mainly produced in liminal zones, more unpredictable and dangerous, exposing the travellers to sundry experiences which rock art may have helped to deal with. To address these issues a short reference to Egyptian ontology, and religion seems to be necessary.

6 THE STRUCTURE OF DWELLINGS FROM THE UPPER PALAEOLITHIC SETTLEMENTS (MEZHRYCH, DOBRANICHIVKA, HINTSI)

Abstract author(s): Chymyrys, Marharyta - Shydlovskyi, Pavlo (Taras Shevchenko National University of Kyiv; Centre for Paleoethnological Research) - Tsvirkun, Ostap (National Museum of the History of Ukraine; Centre for Paleoethnological Research)

Abstract format: Oral

A striking feature of the Upper Palaeolithic sites is the structure of the settlements. Different occupation characteristics can be identified by the functional specifications of individual archaeological structures in relation to the paleoecological framework and the dynamics of settlement development over time.

Mezhyrich, Dobranichivka, Hintsy is a Late Upper Palaeolithic settlements in the Middle Dnieper basin (Ukraine) that belongs to the Epigravettian cultural complex. Palaeolithic cultural layers of the site lie 2.5-3 m below the modern surface. The sites were dated between 15-14.3 thousand years BP (uncalibrated) using the bones of several species of animals, including the mammoth.

A typical settlement area consists of several mammoth-bone dwellings, usually 4, but there may be more. Each unit consists of functionally different structures located around a mammoth bone dwelling and in different archaeological horizons, and should be considered as a complex dynamic structure characterising the interaction of a small social group with the local landscape.

The analysis of individual buildings with functional features of Upper Palaeolithic sites allows to reconstruct the interaction of inhabitants with the surrounding landscape, to understand the connections between various types of activities within the territory of the settlement, to establish functional and seasonal characteristics of occupations and to reveal the behavioural characteristics of Palaeolithic settlers.

The analysis of dwellings shows symmetry in large bones disposition that forms the so-called “architectural ornament”, which makes it possible to consider dwellings as landmarks of monumental art. And this analysis include location, frequency and regularity of objects of mobile art inside buildings as well. The art was applied to mammoth bones or objects made from them. The drawings were made in red ochre. Peculiar line drawings are presented on anthropomorphic figurines.

7 A SPATIAL LIFE: ROCK ART DISTRIBUTION AND VISIBILITY AMONG MOBILE-PASTORAL SOCIETIES IN THE MONGOLIAN ALTAI

Abstract author(s): Jurkenas, Dovydas - Fisher, Michael - Jamsranjav, Bayarsaikhan - Jambajantsan, Amina (Max Planck Institute of Geoanthropology)

Abstract format: Oral

The prevalence of seasonal, impermanent settlements among both ancient and modern pastoral communities in Mongolia has led archaeologists to look in two directions for understanding past mobile societies: the ethnographic record and extramural monumental and artistic remains. Past inhabitants of the Mongolian Altai left behind few sedentary habitation sites but thousands of ritual and funerary monuments and tens of thousands of petroglyphic images. These images depict a wide range of subjects, including wild and domesticated species, figural scenes such as horse masters and birthing women, and technologies of their time such as chariots and stirrups. They provide insights regarding both the spatiality and temporality of access to the mountain faces and rocky outcrops where the petroglyphs appear.

In this paper, we combine field data collected under the Mongolian Archaeology Project: Surveying the Steppes (MAPSS) with satellite imagery interpretation and archival survey data in order to help address the question of how mobile pastoralists organised themselves within a mutable social landscape. We document the locations and types of petroglyphs in relation to ancient monuments, ancient campsites, and modern campsites, at both local and micro-re-

gional scales. We collect the data in GIS and apply geospatial methods such as watershed and least-cost path analyses to determine and compare variable degrees of visibility, accessibility, and connectivity between rock art clusters and between potential settlement areas. While research is ongoing, our preliminary results suggest that during the Mongolian Bronze Age (ca. 2500-700 BCE), rock art may have marked communal space more than private space, producing implications for the nature of Bronze Age polities within a context of mobile pastoralism and emergent social complexity.

8 THE START, THE WAY UP AND THE FINISH. HIGH MOUNTAIN PETROGLYPHS IN UZBEKISTAN AND THEIR RELATIONSHIP TO THE WORLD BELOW

Abstract author(s): Leloch, Michal - Kot, Małgorzata - Szymczak, Karol (Faculty of Archaeology, University of Warsaw)

Abstract format: Oral

The main concentration of petroglyphs in the Kyzyl Dara Gorge is between 2,600 and 3,100 metres above sea level. The site is inaccessible for most of the year and remains challenging and difficult to access during the rest of the year. Despite this, the depictions present there indicate that this space has been intensively visited since the Bronze Age, and its use continues today. Today's users of the grassy slopes of the gorge do not create new petroglyphs and have no relationship with them. However, their motivations and action strategies may provide some indication of what inspired the prehistoric petroglyphs creators.

As in prehistoric times, people today come to Kyzyl Dara seasonally, travelling from settlements in the lowlands or lower valleys. As the survey carried out in recent years shows, the valleys leading up are covered with clusters of different burials in the form of kurgans or cairns, which are gradually being discovered. The features passed by those travelling up to the petroglyphs, located in a very specific space, must have been an essential part of their perception of space.

Analysing a single cluster of sites with petroglyph art will not allow one to draw the correct conclusions about their importance to ancient communities. Only by treating the lowland settlements, the burials on the hills and the high mountain rock art as a single complex will it be possible to fully understand the significance of the unique site of Kyzyl Dara.

8 ROCK ART, LANDSCAPE, AND DIGITIZATION OF NATIVE AMERICAN CULTURAL HERITAGE: THE CANYONS OF THE ANCIENTS NATIONAL MONUMENT, SOUTHWESTERN COLORADO (USA)

Abstract author(s): Ciomek, Katarzyna (Institute of Archaeology, Jagiellonian University in Kraków) - Palonka, Radosław (Institute of Archaeology, Jagiellonian University in Kraków; Crow Canyon Research Institute/Crow Canyon Archaeological Center) - Zych, Bolesław (Institute of Archaeology, Jagiellonian University in Kraków) - MacMillan, Vincent M. (Canyons of the Ancients National Monument, US Bureau of Land Management) - Szczepanik, Piotr - Śliwa, Jakub (Institute of Archaeology, Jagiellonian University in Kraków)

Abstract format: Oral

Rock art in the Mesa Verde region of southwestern Colorado and southeastern Utah in the US Southwest represents one of the most visible traces of Ancestral Pueblo culture and later historic indigenous tribes and cultures of this area (as well as Euro-American presence). Paintings and petroglyphs may be found in rock alcoves and shelters, but mostly in open-air spaces: on exposed canyon walls and on isolated boulders.

This paper will examine the placement of rock art documented and analyzed by the Sand Canyon-Castle Rock Community Archaeological Project, a Polish archaeological project in southwestern Colorado, USA. It will present several aspects of the specific locations of rock art panels in relation to the human settlements, natural landscape features, and surrounding environment, including mesas (plateaus), mountain peaks, and canyons. Another important issue will be presenting the relation of some petroglyph panels to the astronomical phenomena (and Ancestral Puebloan knowledge) as sunrises and sunsets during the summer and/or winter solstices.

In our paper, we will also summarize the non-invasive methods we applied during the research for documentation, inventory, and spatial analyses of particular rock art sites and separate panels. It includes mostly various methods of advanced digital photography, Terrestrial Laser Scanning/TLS, close-range and UAV (drone) photogrammetric methods, and experimental use of panoramic photography (using GigaPan Pro equipment and software). For understanding the spatial dependency data is included in the Geographic Information System/GIS (line of sight, watershed, and other visibility analyses); the information was integrated also with the LiDAR data.

9 SACRED LANDSCAPES IN ROCK ART

Abstract author(s): Taylor, Bernie (Community Member)

Abstract format: Oral

Global anthropologic surveys of hunter-gatherers as well as classical literature from ancient peoples widely record the teachings of their cultural stories through structurally common narratives of journeys in their sacred landscapes. These narratives, typically of a hero on his or her journey, often include elements designating time of day and seasons with those sacred landscapes. This time-factoring is sometimes described by the sun, moon and stars, as well as illustrative changes in flora and fauna. Interacting characters frequently involve anthropomorphic deities, humans, animals, and mixtures of the three. The relatively uniform structures of journey narratives worldwide appear integral to the human experience and presumably emerged before rock art.

This study examined indigenous Basque and ancient Phoenician, Greek and Roman myths in the context of historically recorded mountain faces, rocky areas, bodies of water, and other features of the natural environment that are often still revered in the region. Digital images of Iberian cave images were then visually compared with those landscapes for possible matches.

The findings of this study suggest that Upper Paleolithic artists on the Iberian Peninsula found pareidolia in their natural environment and projected those visualizations into their rock art. Real and supernatural characters, geographical features and motifs, some that may still be recognized in Iberian mythology and Mediterranean region classical literature were surfaced. This study also suggests that structural characteristics of the journey narrative with their descriptive sacred landscapes may be studied with rock art in other regions to better understand geographical uniqueness and perspectives of the original artists.

A. HIMMELSTALUND- A CULTURAL HERITAGE IN A CONSTANTLY CHANGING LANDSCAPE

Abstract author(s): Furuskog, Theres (Norrköping city museum)

Abstract format: Poster

Himmelstalund in Sweden is one of northern Europe's largest concentrations of rock carvings from the Bronze Age and in constant change. From the environment that once made the landscape sacred and a place for rituals, until today's fight for its existence in the middle of a growing city. The city of Norrköping expands around the rock art area, making its surroundings change drastically. The poster will show how the landscape has changed during the past 10 000 years and how humans have used its natural resources during that time. This has affected both the landscape and the Bronze Age carvings which are constantly exposed to the elements as well as to human wear and tear. The poster will also show the rock art and its relationship to known settlements as well as its place in a once sacred landscape characterized by the Motala river. The landscape is about to change drastically as the city of Norrköping is planning for a new district that will surround the rock carving area. Close to the rock carving area is one of Sweden's largest settlements from the Bronze Age called Pryssgården. Was this the home of the rock carvers? New excavations will soon teach us more about life in this area during the Bronze Age.

672 HUNTER-GATHERER ANIMAL EXPLOITATION IN THE PLEISTOCENE AND THE ARCHAEOLOGICAL RECORD [PAM]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Lengyel, György (Hungarian National Museum) - Wilczyński, Jarosław (Polish Academy of Sciences)

Session format: Regular session

In the Pleistocene epoch, animals were common food resources for humans. The archaeological findings of animal exploitation largely are related to herbivores and carnivores but remains of any other living creature of the Earth's biome can be part of the faunal assemblages. Archaeozoological studies indicated that animal species of different kinds were hunted or scavenged for dietary purposes, to obtain raw materials for clothing, ornamentation, musical instruments, housing, tools of domestic activity, and to construct hunting weaponry. Therefore, animals were the most important resources for a thriving human existence in the Pleistocene. Prey animals were of different species, each of which had a specific behavior that may have demanded particular knowledge and technique of hunting and exploiting methods. As animal bones are often part of the Pleistocene archaeological site, there must be various evidence of animal exploitation embedded together with artifacts and fossil remnants of human behavior. The exploitation of animals by Pleistocene humans thus shapes and fundamentally contributes to the formation of the Pleistocene archaeological record.

This session aims at

- inspiring to review archaeological assemblages to illustrate human purposes, techniques, technologies, constraints, and adaptations in animal exploitation;
- seeing the variability or principles of human behavior involved in animal exploitation;
- discussing how prey ecology affected the organization of human living, subsistence strategy, and technology;
- reconstructing the variability of hunting strategies;
- studying adaptiveness in human behavior that adjusts subsistence strategy to the changing environment and prey spectrum;
- understanding human mobility and settlement network of hunter-gatherers in relation to animal exploitation;
- finding correlations between prey species and artifacts;
- studying the roots of animal domestication in hunter-gatherer societies;
- exploring the role of Pleistocene wildlife in the formation of the archaeological record.

ABSTRACTS

1 REEVALUATING THE “ELEPHANT BUTCHERING AREA” AT THE MIDDLE PLEISTOCENE SITE OF NOTARCHIRICO (MIS 16) (VENOSA, BASILICATA, ITALY)

Abstract author(s): Pineda, Antonio (Museum National d’Histoire Naturelle; Institut Català de Paleocologia Humana i Evolució Social) - Mecozzi, Beniamino - Iannucci, Alessio (Sapienza University of Rome) - Carpentieri, Marco (Università degli Studi di Ferrara) - Sardella, Raffaele (Sapienza University of Rome) - Rabinovich, Rivka (The Hebrew University of Jerusalem) - Moncel, Marie-Hélène (Museum National d’Histoire Naturelle)

Abstract format: Oral

The archaeological site of Notarchirico represents a key site to study the onset of the Acheulean technology in Western Europe and to better comprehend the its human occupation during the Middle Pleistocene. The site was excavated from 1979 to 1995 under the direction of Marcello Piperno. In 1990 and 1991, during the excavation of the level named A1, almost 40 elephant (*Palaeoloxodon antiquus*) remains were recovered, mostly belonging to the cranial skeleton (cranium, mandible and tusks) of a young adult male, where 42 stone tools were found around, including a chopper, two handaxes and several flake-tools. This “elephant area” was originally interpreted as a butchering site.

Since 2016 a project focused on archeological and paleontological record of Notarchirico started with new excavations. One of the aims of the fieldwork activities is to restudy the findings in situ preserved in the Paleolithic Park of Notarchirico. In order to examine the anthropic role in of mega-herbivores exploitation, such as elephants, we have conducted a taphonomic and technological reevaluation of the original archaeological materials, as well as a reanalysis of their spatial distribution. Such analyses require both detailed examination of each element surface as well as their relative deposition. Actually, the way the remains were left in situ, is indeed very impressive, but a closer look have shown that the elements are not completely exposed thus preventing a thorough examination of their surfaces and relative allocation. The preliminary observation of the spatial relationship of the different materials seemed to suggest the existence of more than one depositional event. Here, we present the first results of the revision of these materials, and we discuss the importance of applying detailed taphonomic examination in order to reconstruct the anthropic role in processing of mega-herbivores.

2 NEANDERTHAL HUNTING STRATEGIES AND TERRITORY EXPLOITATION IN SOUTHERN FRANCE: SITES FROM THE LIMESTONE PLATEAU OF THE GRANDS CAUSSES

Abstract author(s): Roussel, Audrey - Gourichon, Lionel (Université Côte d’Azur; CNRS, UMR 7264 CEPAM) - Brugal, Jean-Philip (Université Aix-Marseille; CNRS, UMR 7269 LAMPEA)

Abstract format: Oral

Our research investigates human-environment relations during the Middle Paleolithic (MP) in Europe in order to determine the settlement patterns and subsistence strategies of Neanderthal communities. For this purpose, we propose an analysis of Human-Animal relations through the study of faunal record from two archaeological sites: the Canalettes rock-shelter and the Rescoundudou, both dated to the OIS 5/4 and located on the Grands Causses, limestone plateaus on the edge of the Massif Central (South of France). The results will be compared with data from other major archaeological sequences in the region for the same period.

Our study combines two complementary approaches using macroscopic (zooarchaeology) and microscopic (cementochronology) analysis, especially applied to the teeth of cervids and bovids, which are the main preys. To this end, we relied on two main parameters: the composition of the animal groups hunted and their season of acquisition. These data allow us to address the issue of the organization of human groups to cope with seasonal and spatial variations in the resources available in the environment. Moreover, several other MP sites in this region bring complementary elements to our analyses, offering a general overview of Neanderthal organizational strategies.

Such innovative approach provides new information, such as the schedule of activities and functions of the site linked with short-term hunting objectives of the human groups. Our results evidence clear seasonal patterns with a preferential exploitation of the faunal resources during the warmest period/season, as well as differential game acquisition between steep forested valleys and grassy highlands. This research demonstrates the great knowledge of prey eco-ethology by Neanderthals, and all their abilities to anticipate in seasonally and geographically highly contrasting environments.

3 USEWEAR ANALYSIS ON RETOUCED AND NON-RETOUCED CALLISTA CHIONE VALVES: A MULTI-ANALYTICAL APPROACH. A PRELIMINARY STEP TO INTERPRET NEANDERTHAL SHELL TECHNOLOGY

Abstract author(s): Chaniotaki, Evangelia (Sezione di Scienze Preistoriche e Antropologiche, Dipartimento di Studi Umanistici, Università degli Studi di Ferrara; Departament d’-Història i Història de l’Art, Universitat Rovira i Virgili) - Tumung, Laxmi (Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA; Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria, Gobierno de Cantabria, Grupo Santander) - Romagnoli, Francesca (Departamento de Prehistoria y Arqueología, Universidad Autónoma de Madrid) - Ollé, Andreu (Institut Català de Paleoeologia Humana i Evolució Social - IPHES-CERCA; Departament d’-Història i Història de l’Art, Universitat Rovira i Virgili)

Abstract format: Oral

Seashells have been consistently present alongside the Homo species, especially to their adaptation in the coastal zones. Shell as tools has been identified in several Pleistocene and Holocene sites along Mediterranean and Atlantic coasts of Europe, mainly thanks to use-wear analysis. However, use-wear studies on shell implements are not systematic yet.

Currently, the most ancient use of shell as tools in European regions has been identified in Middle Paleolithic sites. Neanderthals retouched valves of *Callista chione*, a big marine mollusk, to shape tools. The goal of this paper is to build an experimental protocol for create a reference collection to further assess the function of retouched *Callista chione* through a multi-analytical approach.

The experimental program will integrate the experimental protocol previously developed to assess the functional potential of these tools and the methodological SEM protocol for use wear analysis on shells.

For our experiments, we have used 16 fresh valves of *Callista chione*. Different cleaning protocols has been tested and moulds and casts were done for the cutting edges to document the edge before the use. We used retouched and non-retouched *Callista chione* to perform different experimental activities and check the edge efficiency. Comparing retouched and non-retouched shell edges, we tried to understand how the different use-wear develops. All the experimental samples were used in a sequential order during 5, 10 and 15 minutes sessions. The experimental shell tools have been used in butchery and wood working activities.

For the multi-analytical approach, we used the combination of three different microscopes (Optical Microscope, 3D Digital Microscope SEM). These microscopes give an insight about distinguishing characteristic traces of use-wear on the working edge of the shell tools. Combining different microscopic analysis we tried to understand, identify and interpret the traces developed on the marginal edge of the modified and non-modified *Callista chione*.

4 INVESTIGATING SEASONAL MOBILITY OF PREY SPECIES AT LAZARET CAVE, FRANCE (MIS 6) USING STRONTIUM ISOTOPES AND SPATIAL ASSIGNMENT MODELS

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Abstract format: Oral

The Middle Pleistocene site of Lazaret Cave, located in modern-day Nice (France) has a rich archaeological record, with a vast assemblage of faunal remains pertinent to understanding early Neanderthal (*Homo neanderthalensis*) subsistence behaviours as well as red deer (*Cervus elaphus*) ecology in MIS 6. Zooarchaeological studies at Lazaret Cave have shown a high abundance of red deer and ibex (*Capra ibex*) remains throughout the majority of archaeological layers suggesting preferential hunting of these two species which is not seasonally dependent. This study examines molars from red deer and a single ibex from archaeological layer UA25 (dating to ~150 kya) for strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) and oxygen ($\delta^{18}\text{O}$) isotopic analysis to reconstruct seasonal mobility patterns during tooth formation.

The isotope data was then combined with a local $87\text{Sr}/86\text{Sr}$ isoscape and computational spatial assignment was undertaken to reconstruct potential migration ranges of red deer and ibex in order to better understand Neanderthal hunting ranges.

Results from this study show that red deer had a minimum seasonal migration range of approximately 20km with their winter ranges located near Lazaret Cave. In comparison, the single ibex showed no seasonal mobility and could have occupied the landscape surrounding Lazaret throughout the year. This means that while Neanderthals could have hunted red deer in the local area during winter periods, they would have had to travel up to 20km during summer occupation events. Through the combination of zooarchaeology, isotopic analysis, and spatial assignment we identify possible Neanderthal hunting patterns and provide the first evidence for red deer spatial ecology in southern France dating to MIS 6. Further work is currently underway on faunal remains from other layers to investigate whether red deer and ibex spatial ecology and Neanderthal hunting patterns change due to climatic variations throughout MIS 6.

5 LATE PLEISTOCENE CAVE EXPLOITATION IN THE SOUTHERN CARPATHIANS

Abstract author(s): Chu, Wei (Leiden University) - Demay, Laëticia (Muséum National d'Histoire Naturelle) - McLin, Scott (University of Tuebingen) - Peudon, Floriane (UMR 7269 - LAMPEA) - Ciornei, Alexandru - Dobos, Adrian (Institute of Archaeology „Vasile Parvan“)

Abstract format: Oral

Caves and other karstic features are main archives of Pleistocene animal fossils in East-Central Europe. At the same time, these caves are generally poor in Paleolithic artifacts, particularly when compared to other regions of Europe and the Levant. This phenomenon also contrasts with the sometimes-dense accumulations of lithics at open-air sites, where fauna is seldom well-preserved. In the past, scholars have suggested that reasons for this may have to do with (a) lesser research intensity (b) differences in regional sedimentary regimes; or (c) diverse hominin subsistence strategies across time and space, including a greater use of caves as animal exploitation resources. However, understanding how these caves were used by hominins and animals has partly been hampered by a reliance on legacy excavations for which data is often unreliable. Here we present preliminary lithic, faunal, and taphonomic data from test trenches and excavations of a newly excavated cave of Copta Mare in the southern Carpathians with the aim to illuminate how a Late Pleistocene cave was used in the Paleolithic. The implications of this work contribute to our regional understanding human mobility and settlement network of hunter-gatherers in relation to their animal exploitation patterns.

6 UPPER PALAEOLITHIC SUBSISTENCE STRATEGIES IN THE WESTERN CARPATHIANS

Abstract author(s): Lengyel, György (Hungarian National Museum - Magyar Nemzeti Múzeum) - Wilczyński, Jarosław (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences)

Abstract format: Oral

The Upper Palaeolithic period in the Western Carpathians (Southern Poland, Moravia, Slovakia, Hungary, Lower Austria) is dated to between 43,000 and 12,000 cal BP. Culturally, it is composed of Early Aurignacian, Late Aurignacian, Early Gravettian, Pavlovian, Late Gravettian, Early Epigravettian, Late Epigravettian, Magdalenian, and Epimagdalenian. These cultures can be best differentiated by their hunting osseous and lithic equipment. The various hunting tool types most likely are representations of different hunting strategies and thus human subsistence. We aimed at finding a correlation between the faunal composition of the cultures and the hunting weaponry to be able to reveal what makes the archaeological record of the anatomically modern human population variable throughout the Upper Palaeolithic. We studied both cultural and faunal data against the climatic changes during the late MIS3 and the whole MIS2, to see how climate affected human subsistence strategy. Also, art, burials, site features, lithic dumps, all that can indicate the duration and the function of the site, and human paleogenetic data are taken into account to accomplish this research. We used data from our investigations and from papers published by other scholars. This multivariate analysis is expected to reveal the formation of the Upper Palaeolithic archaeological record.

7 ON THE PERIPHERY OF A MAMMOTH „KJÖKKENMÖDDING“. THE NEW EXCAVATION OF THE EXTENSIVE BONE DEPOSIT AT DOLNÍ VĚSTONICE I.

Abstract author(s): Novák, Martin (Institute of Archaeology of the Czech Academy of Sciences) - Wilczyński, Jarek (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences) - Händel, Marc (Austrian Archaeological Institute, Austrian Academy of Sciences) - Boriová, Soňa - Herčík, Ondřej - Chlachula, Dominik (Institute of Archaeology of the Czech Academy of Sciences)

Abstract format: Oral

Our contribution presents first results of the recent excavation at the classic Gravettian site Dolní Věstonice I undertaken in summer 2022. The new fieldwork focused on the eastern periphery of the large mammoth bone deposit located in the site's upper part, initially excavated by B. Klíma in 1966-1968.

The find layers were re-assessed to obtain new zooarchaeological material for aDNA and stable isotopes analyses, as well as samples for age determination and reconstruction of the paleoenvironment within the ERC project “MAMBA - Exploring Mammoth Bone Accumulations In Central Europe“. The project focuses on the formation of mammoth bone deposits at Upper Palaeolithic sites in Central Europe. It aims to clarify how and why these large accumulations of faunal remains were formed, and to explore their function in the settlement and subsistence strategies of hunter-gatherer groups in the corridor between south Poland, Moravia, and northeast Austria in the period between 35-25 ka.

The main find layer contained abundant faunal remains together with lithic artefacts, charcoal fragments, and malacofauna. Site and find layer formation are very complex and document a post-occupational interplay between different natural factors, including a baseline aeolian sedimentation, pedogenesis, slope processes, and permafrost features. The new excavation yielded thousands of bone, tooth, and tusk specimens belonging to animal species commonly found here during previous fieldwork, as well as at other sites in this region, such as woolly mammoth and rhinoceros, horse, reindeer, wolf and fox. The scarce lithic material includes a few microdentulates, which allow us to unambiguously attribute this assemblage to the Pavlovian. New data were also obtained for the geomorphological setting and spatial structure of the deposit.

Acknowledgement: The excavation at Dolní Věstonice I was supported by the ERC Consolidator Grant “MAMBA“, reg. nr. 101045245.

8 THE SIGNIFICANCE OF REINDEER FUR FOR THE SUBSISTENCE OF THE EPIGRAVETTIAN HUNTER-GATHERERS IN KAMMERN-GRUBGRABEN, LOWER AUSTRIA

Abstract author(s): Pasda, Kerstin (Institute of Pre- and Protohistory, Friedrich-Alexander-Universität) - Mayr, Christoph (Institute of Geography, Friedrich-Alexander-Universität; Department Earth and Environmental Sciences & GeoBio-Center, Ludwig-Maximilians-Universität) - Maier, Andreas (Institute for Prehistoric Archaeology, University of Cologne) - Reiss, Lilian (Institute of Geography, Friedrich-Alexander-Universität) - Einwögerer, Thomas - Händel, Marc - Buchinger, Norbert (Austrian Archaeological Institute, Austrian Academy of Sciences) - Lücke, Andreas - Wissel, Holger (Research Center Jülich GmbH, Institute of Bio- and Geosciences)

Abstract format: Oral

We present reflections on the importance of reindeer fur for the Epigravettian hunters of the eastern part of Central Europe. For this purpose, the Epigravettian site of Kammern-Grubgraben (Last Glacial Maximum (LGM), approx. 24 – 19 ka cal BP) was compared to Early Gravettian assemblages (approx. 33 – 29 ka cal BP) from the sites of Krems-Hundssteig, Krems-Wachtberg, and Langenlois A in Lower Austria. In particular, differences in the animal bone composition were investigated that point to changes in living conditions and consequently to changes in subsistence strategies.

The faunal composition of the sites under investigation changes substantially over time, from mammoth-dominated assemblages in the Early Gravettian to a dominance of ungulates, such as horse and ibex, but predominantly reindeer in the Epigravettian. Additionally, a shift in the nitrogen isotope baseline of bone collagen between the specimens of the Early Gravettian sites and the Kammern-Grubgraben is best explained by decreased soil and plant $\Delta^{15}N$ values during the LGM due to decreasing mean annual temperature.

The increasingly cold and arid climate may also have led to a growing need of warm clothing and other goods made of reindeer fur and skins by the Epigravettian hunters.

The dominance of reindeer of all ages and sexes, but especially the high proportion of young animals in the Kammern-Grubgraben site, is striking. Also, the fact that reindeers were hunted exclusively in winter could indicate that a major purpose of repeated visits at this site was to obtain skins. The presence of all skeletal parts in reindeer and the high number of carnivores may be considered further indications supporting this hypothesis.

9 FOCUS ON REINDEER: THE ZOOARCHAEOLOGY OF LAST GLACIAL MAXIMUM UPPER PALEOLITHIC SITES IN NORTHEAST ROMANIA

Abstract author(s): Demay, Laëticia (Muséum national d'Histoire naturelle de Paris) - Mărgărit, Monica (Doctoral School of Economics and Humanities, Valahia University Târgoviște) - Anghelinu, Mircea (Faculty of Humanities, Valahia University Târgoviște,) - Händel, Marc (Austrian Archaeological Institute, Austrian Academy of Sciences) - Niță, Loredana (Faculty of Humanities, Valahia University Târgoviște,) - Cordoș, Cristina (Institute of Archaeology, Romania)

Abstract format: Oral

New field research brought to light fresh data about the chronology, cultural affiliation and subsistence activities of Gravettian and Epigravettian hunter-gatherer groups occupying northeast Romania during the LGM. Our focus here is on the recently reassessed sites Bistricioara Lutărie III (Bistrița Valley), Dolhasca Dealul Viei II (Siret Valley) and

Cotu Miculinți (Prut Valley). Zooarchaeological studies applied to the faunal remains from these find spots unraveled new data regarding the preservation of the assemblages, the types of acquisition and use of animal resources for dietary and raw material purposes, and identified the modalities of site occupations by determining the types and seasonality of human activity. Although uneven in terms of preservation and resolution, the data from the new sites add to the existing corpus of zooarchaeological data highlighting the crucial importance of reindeer for the regional Upper Paleolithic hunter-gatherers, both in terms of subsistence and raw material for domestic and hunting equipment.

10 THE ROLE OF FOSSIL MOLLUSC SHELLS IN THE UPPER PALAEOOLITHIC OF HUNGARY

Abstract author(s): Bálint, Csaba (Dobó István Vármúzeum)

Abstract format: Oral

The archaeological find material of the Upper Palaeolithic sites of Hungary occasionally yield fossilized marine mollusc shells, intentionally transported there by the occupants. The sites that contain most of these items are located relatively close to one another, within the Danube bend area, in Northern Central Hungary. The mollusc shells probably originate from mostly tertiary geological sources that are also found in the Danube bend area. By their nature, the shells represent one of the inedible animal resources of the Pleistocene, so the purpose of their procurement raises questions. In the literature these items are often referred to as jewelry. Despite that notion, only a small portion of the shells bear signs of modification that would hint at them being worn as parts of human attire. The aim of this paper is to shed light on the purpose of the exploitation of these items, their possible or intended function and the reason why the settlements containing fossil shells are concentrated in a relatively small area within the Central Carpathian Basin. As the assemblages show heterogeneity to one another due to the most preferred species of molluscs being different for each site, further questions can be raised on the relationship between settlements of the area.

674 METHODS, MEANINGS AND MAINTENANCE - APPROACHES TO MEDIEVAL ECCLESIASTICAL BUILDINGS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Seppanen, Liisa (Aalto University; Helsinki University) - Savolainen, Panu (Aalto University) - Schöffbeck, Tilo (Independent researcher) - Hallgren, Matthias (Independent researcher)

Session format: Regular session

Since the 19th century, medieval churches have been valued as important cultural heritage and have been investigated frequently and intensively in many countries. In recent times, studies have been also addressed to roofs and attics constituting the unique testimony of still standing and functioning original wooden constructions from the Middle Ages.

The fire of Notre-Dame of Paris in 2019 as well as destructions of many other ecclesiastical buildings have reminded us how important it is to make surveys and studies and document the constructions in detail when they are still standing. Church attics and roof constructions (as well as attics of other buildings) contain and demonstrate both tangible and intangible heritage manifesting the expertise and craftsmanship of the time, engineering and woodworking skills, emergence and existence of professional networks, transition of know-how and adoption of innovations.

In this session, we invite participants to present past and on-going studies about churches and other monumental buildings focusing on the following issues:

- documentation, surveys and research methods (with special attention to roof constructions)
- resource management (including production, acquisition, and use of the materials) related to construction and maintenance of monumental architecture
- building workshops, constructors, and the identity of builders
- emergence and transition of innovations and local traditions
- restorations and transformations in different times.

Furthermore, we welcome papers discussing how the churches and other monumental buildings, notably their attics, were used and viewed at different times and how the aspects of heritage have been and are considered and discussed by different parties when justifying the preservation or transformation of monumental buildings and environments in changing societies. We wish to highlight the invisible roofs and attics as an important part of architectural history and heritage and increase communication between experts representing different research fields and related praxis.

1 EPISTEMOLOGICAL EXPLORATIONS WITH ROOF CONSTRUCTIONS AND CHURCH ATTICS

Abstract author(s): Savolainen, Panu (978-952-68929)

Abstract format: Oral

The presentation examines the research and epistemology of wooden constructions, especially timber frames, and attics. It is based on an iterative process of documentation of medieval Finnish structures with a cross-disciplinary research group formed both of practitioners and scholars.

The intention of my presentation is twofold. First, I approach the development of understanding and surveying the structures within the duration of the research project “Medieval roof structures in Finland” (2022-2024). During the fieldworks, new and unexpected phenomena have been discovered in the structures. I shed light on the ways this has shaped the goals of the project as well the priorities and epistemology of surveying the structures.

Second, I contemplate the possible but hitherto unexplored information and data that would be possible to gather from the structures. Here I also reflect the opportunities of analysing and understanding society, communities and individuals through the interpretation of complex architectural structures made of timber.

2 DISCARDED AND HIDDEN HERITAGE - THE ARCHAEOLOGICAL AND ARCHITECTURAL EVIDENCE FROM THE CHURCH ATTICS IN FINLAND

Abstract author(s): Seppanen, Liisa (Aalto University; Helsinki University)

Abstract format: Oral

Medieval churches manifest manifold both tangible and intangible heritage which is discussed from different perspectives and by various stakeholders. The changes and repairs of clerical spaces reflect the needs of the physical building, ideological changes, and demands of the parish and the surrounding society.

Medieval church attics are impressive spaces that mostly have been visible mainly to those engaged in building, repairing, and maintaining them. Sometimes the builders have left behind materials, tools, and equipment used or meant for the construction of the church. For centuries, the attics could have been used for storing and hiding, and thus may contain and reveal information about the use of the space as well as the beliefs, ideas, and history of the people accessing the attics.

Although many churches have suffered from destructive fires and consequent transformations, the archaeological heritage is still available in many medieval churches. Constructions on the attics reveal the phases of construction as well as maintenance, but quite often the stratified and otherwise materialized archaeological heritage is lost due to clearing activities related to repairs and maintenance work.

In this paper, I am discussing the aspects of heritage regarding Finnish medieval churches. The churches highlighted in this presentation are in Sipoo and Ulvila in the southern and western parts of Finland. Both churches were built in the latter part of the 15th century and have been included in an ongoing research project focusing on medieval churches in Finland. The field works conducted in these churches have demonstrated the need to emphasize and document the remaining heritage in the attics, too, and widen the scope of heritage both in discussions and in practice.

3 MEDIEVAL ROOF STRUCTURES IN CLIMATE CHANGE AND GREEN TRANSITION

Abstract author(s): Sandin, Ylva (RISE Research Institutes of Sweden) - Haugen, Annika - Agasöster, Björg (NIKU)

Abstract format: Oral

This study concerns Swedish and Norwegian medieval roof trusses in churches. These impressive structures have carried their loads for up to nine hundred years and are important sources to knowledge of medieval timber building. They also form unique historic spaces. We now see that climate change risk threatening them directly or indirectly in three ways: 1) By the changed climate itself. 2) By actions taken with the good intention of reducing greenhouse gas emissions from property management – energy efficiency measures or transition to renewable energy sources. 3) By climate adaptation measures, such as installation of gutters or vapour barriers.

Climate change is coming faster than expected and measures are also being carried out at a high pace. It is extremely important that the measures implemented do not technically damage these unique constructions or reduce their heritage values.

This study aims at compiling good examples of how medieval church roofs can be managed to achieve reasonable energy efficiency while preserving cultural and historical values. Through literature studies, interviews and workshops, a guide for safeguarding heritage values when choosing measures is developed. Good examples are collected and presented. Informants are chosen to represent initiated people ranging from caretakers, property managers, carpenters, engineers, architects and antiquarians to researchers.

This both resilient and fragile medieval cultural heritage is of public interest and a unique part of a good built environment. The project is important for today's and future managers of the churches as well as for researchers and the public.

4 A ROOF DRAWING IN A MEDIEVAL PARISH CHURCH: EVIDENCE OF ARCHITECTURAL CHANGE

Abstract author(s): Hollis, Crystal (University of Exeter)

Abstract format: Oral

Graffiti is often recorded and used to add new layers of understanding to the social history of a parish church. These inscriptions have a variety of designs. Less popularly discussed, are architectural drawings and pieces of evidence pertaining to building design and development. Some architectural schema do exist, though they are rare and often depict pieces of moulding or windows.

The medieval church of Ampney St. Mary is famous for its thirteenth and fourteenth century wall paintings and its Romanesque tympanum. However, on the walls of the chancel is a rare architectural inscription depicting a roofing structure. Such remnants of the medieval building and design process rarely survive, and graffiti of roof structures is rarely found in English parish churches. More interestingly, the design on the chancel wall does not match the current medieval roof. This paper will explore the connection between the current roof and the roof design drawn on the wall, as well as explain how graffiti such as this can be used to better interpret building chronologies and histories. By investigating drawings such as these, researchers can better understand the process of church building, restoration, and alteration over the centuries.

5 TREE-RINGS AND TIMBERS IN SCOTLAND'S MEDIEVAL CHURCHES: DENDROCHRONOLOGICAL RESULTS FROM SE SCOTLAND REVEAL POTENTIAL OF AN UNDOCUMENTED NATIONAL HERITAGE RESOURCE

Abstract author(s): Mills, Coralie (Dendrochronicle; University of St Andrews)

Abstract format: Oral

As the South East Scotland Oak Dendrochronology research project heads towards a close, a key outcome has been discovering, dating and provenancing previously unknown medieval timber structures in several Scottish medieval churches. Dendrochronology and buildings archaeology have been relatively poorly supported in Scotland compared to England and much of Europe and Scandinavia. Thus, the roof structures and timberwork of Scottish medieval ecclesiastical buildings are largely unknown, un-surveyed and untapped in terms of research potential. Surprising dendrochronological results from St Giles in Edinburgh, St Mary's in Haddington and Kirkliston Parish Church reveal precise medieval dates and unexpected timber provenances, evoking specific relationships in time and space between woodlands, patrons, wrights and suppliers, and indeed, between nations. St Giles exemplifies the rich information which may be obtained through dendrochronological study, in this case from a medieval timber structure hiding in plain sight in the centre of a capital city. Due to timber shortages in Scotland since at least the 15th century, in other churches the results show that early timbers can survive recycled into later fabric, allowing us to see the ghosts of earlier iterations of the church buildings and providing precision dating for construction in times when historical documentation is sparse.

This regional study demonstrates the untapped potential in Scottish medieval churches and has significant implications for the future conservation, documentation and scientific study of surviving medieval church fabric across Scotland as whole. This largely untapped resource is also key to understanding the evolution of roof forms and wood-working technologies in medieval Scotland and as a repository of material for developing regional reference chronologies to assist the future application of dendrochronology in Scotland more widely.

6 MANAGEMENT OF WOODEN RESOURCES DURING THE CONSTRUCTION OF MEDIEVAL CHURCH ROOF STRUCTURES IN FINLAND

Abstract author(s): Dalheimer, Franziska (Aalto University)

Abstract format: Oral

During the last two decades investigations intensified on the wooden roof structures of medieval stone churches in Finland. Only around 20 of these large-scale wooden roof trusses outlasted the past 550 years and they represent the last still standing medieval structural timber in Finland's built environment. The gained insights started shifting the attention from church interior and facades to the marvels of medieval wood construction in the attics. This research goes beyond the physical evidence of the timber structure and reveals perceptions of the local resource management of major medieval construction projects in Finland.

This research follows the case studies of Pyhtää and Ulvila church with the research question of What do the quantities of wooden material of Pyhtää and Ulvila churches' roof structures reveal about the resource management? The main methods include field work studies, microscopic wood identification, analysis of pollen percentage and experimental archaeology research. The Life Cycle Assessment methodology gives additionally structure to reconstruct the resource consumption of wooden material during the life cycle phases of production and construction. This includes a reconstruction of extracted material quantities and an inventory of the used wood species, material extraction places and the extraction impact on the surrounding of Pyhtää and Ulvila church. The data can additionally be used to speculate on material shortages, certain material choices, medieval manufacturing process and waste management.

The study is tied to the previous and ongoing research at Aalto University (Medieval Wooden Building Heritage in Finland) which includes a close collaboration with specialists in architectural conservation, veterinary medicine, wood science and archaeology. The output is preserving Finland's medieval wooden building heritage and gaining deeper sociological and architectural insight of medieval resource use in Finland through use of current technological advancement.

7 EKESKOG - ASSESSING A 13TH CENTURY TIMBER BELFRY IN WESTSWEDEN

Abstract author(s): Hallgren, Mattias (TRADITIONSBÄRARNA) - Gullbrandsson, Robin (Västergötlands museum)

Abstract format: Oral

Sweden has 12 preserved timber belfries from the Middle Ages, most of them recognized as medieval constructions in surveys that started around 2010. One of these was found nearby the 13th century church of Ekeskog in the province of Västergötland, West Sweden. In total seven timber belfries are dated or attributed to the Middle Ages in this region. They date from the 14th and 15th century and are distinguished by their way of construction, a timber framing with no sill. Originally, the posts stood only on flat stones. This kind of belfry construction is related to preserved High and Late Medieval ones in Denmark and Northern Germany.

The belfry of Ekeskog has for long been in need of a proper restoration due to severe damages caused by fungi. In 2022, we documented and evaluated the construction, history and damages of the belfry. The assessment included dendrochronological analysis (made by University of Lund), archival studies, and minor archaeological trench excavations. The analyses demonstrated that the fir trees were felled at the same time as the trees for the church roof, in the 1240s and 1260s, dating the construction of the belfry to the 1260s. According to the analysis, Ekeskog is hitherto the oldest dated still standing construction of this kind in Sweden. Archival sources testify that the belfry was dilapidated in the 18th century and therefore large reparations were made in 1804 when sills were supplemented /added. The timber was felled already in 1790.

The recently finished assessment has shown the exceptional values inherent in the belfry of Ekeskog. Now a restoration is under preparation to maintain and enhance these values.

8 WHO WERE THE BRICKMAKERS? TRACING CHURCH CONSTRUCTION TEAMS IN LATE MEDIEVAL FINLAND

Abstract author(s): Aalto, Ilari (University of Turku)

Abstract format: Oral

During the 15th century, an unprecedented wave of stone construction took place in Finland (then part of the kingdom of Sweden): most of the medieval stone churches in mainland Finland were built between 1420 and 1550. However, only sporadic written evidence of the organization of church construction sites remains, and the only way to gain new insights to the building processes is to study the churches themselves. Brickmakers' personal marks found in the churches form an important, yet hitherto overlooked set of data. Such marks were used in Finland from 1440s to 1480s, and the material allows one to identify individual master brickmakers who can be followed from one church to another. This paper makes a spatial analysis of where the marks can be found geographically and seeks to answer the question of whether the identified masters worked as fixed professional groups or as itinerant, freelancer craftsmen. The set of data consists of ten churches with brickmakers' marks, situated in Southwest Finland.

9 AT THE INTERSECTION OF FAITHS AND CULTURES - RESEARCH ON HISTORY OF ST.DOMINIC'S CHURCH IN PŁOCK

Abstract author(s): Dobek, Mikolaj (First year student of master's studies, Nicolaus Copernicus University in Toruń) - Dabralet, Igor (Second year student of master's studies, Nicolaus Copernicus University in Toruń)

Abstract format: Oral

One of the main tasks faced by archaeologists is to fill in the "blank spots" in the history of given communities. In practice, this often means recognizing the history of changes in places about which written sources are silent. Until

recently, this type of place was the church of St. Dominic in Płock along with the post-Dominican monastery. The order functioned in this place for 500 years. Later, in the 19th and 20th centuries, the Evangelicals and Orthodox Christians used the complex. In recent years, the complex was inventoried and a number of architectural and conservatory analyzes were carried out (roof constructions, altar, internal monastery walls). However, no archaeological work has been carried out until 2022.

The lack of sources about the changes in the construction of the church and monastery was the reason why the students of the NCU in Toruń created the project "At the intersection of faiths and cultures - research on history of St. Dominic's Church in Płock". During the interdisciplinary research, archaeological exploration of the undergrounds under the complex was made. A second entrance to the crypt was discovered, the existence of which was confirmed in the descriptions found by the archivist. The bone material from two ossuaries was analyzed by an anthropologist. Analysis of post-medieval movable object and the stratigraphy of the crypt allowed to broaden the knowledge about the construction phases. The presentation of the research results of the post-Dominican church in Płock, shows how much even a low-budget research project can influence the recognition of the centuries-old history of a medieval sacral building. Conducting interdisciplinary excavations in a place that doesn't have a sufficient source base in the form of written sources made it possible to outline the history of a given place and its users through the prism of archaeological objects.

10 EARLY MEDIEVAL BAPTISTERY AT THE CHURCH OF SAINTS MARIA ET DONATO ON THE ISLAND OF MURANO IN VENICE

Abstract author(s): Zukowski, Robert - Baranowski, Tadeusz (Institute of Archaeology and Ethnology Polish Academy of Sciences)

Abstract format: Oral

Basilica of Saints Maria and Donato on Murano Island is a jewel of Venetian Romanesque architecture of the Ravenna type. It was probably built in the 7th century, but written sources date it to the 10th century. In the 12th century it was restructured at the time of the arrival of the remains of San Donato.

The research into the origins of the church is especially important for reconstruction of the history of one of the main settlement centers of the Venice Lagoon foundation and its transformation up to our times, which allows us to observe the regularity of the birth of cities in Europe.

Many data on the issues of spiritual and material culture of the inhabitants of Murano were obtained during the archaeological work thanks to the remains of sacral architecture found and the burials near the church. These are particularly important sources of knowledge of the past, which provide direct and indirect information on the local population, also indicating their level of economic and social development.

The aim of this paper is presentation of unique research conducted in the area of Murano which allow to reconstruct the process of formation of the early city structure of Venice and its society, as well as its impact on the mediaeval and modern city's layout.

11 METAL AS CONSTRUCTION MATERIAL IN GOTHIC ARCHITECTURE: CHRONOLOGY, PROVENANCE AND USES OF IRON ARMATURES IN NOTRE-DAME DE PARIS

Abstract author(s): Bernard, Mathilde (Laboratoire Archéomatériaux et Préviation de l'Altération - LAPA, IRAMAT UMR7065, NIMBE UMR3685, Université Paris-Saclay, CEA/CNRS) - L'Héritier, Maxime (Université Paris 8, ArScAn UMR7041, CNRS) - Beck, Lucile - Delqué-Kolic, Emmanuelle (Laboratoire de Mesure du Carbone 14 - LMC 14, LSCE-IPSL, CNRS/CEA/UVSQ) - Azéma, Aurélie (Laboratoire de Recherche des Monuments Historiques - LRMH, CRC UAR3224, Muséum National d'Histoire Naturelle - MNHN) - Lorquet, Philippe (Institut National de Recherche Archéologiques Préventives - INRAP) - Bauvais, Sylvais (Centre de Recherche Français à Jérusalem - CRFJ, UMIFRE n°7 CNRS/MEAE, UAR3132) - Dillmann, Philippe (Laboratoire Archéomatériaux et Préviation de l'Altération - LAPA, IRAMAT UMR7065, NIMBE UMR3685, Université Paris-Saclay, CEA/CNRS)

Abstract format: Oral

Following the set up of the scientific program coordinated by the French National Centre for Scientific Research after the fire of the 15th April 2019, the clearing, sorting and inventory of the remains of Notre-Dame de Paris revealed a great diversity of iron alloys within the cathedral. The study of these metals allows enriching our knowledge of the monument but can also reveal social practices and their evolution according to the different periods of the building site. On seeing the cathedral architecture as a materialization of the social life around the construction yard, the archaeometallurgical analyses of the iron armatures can provide information on the production and circulation of the metal, the manufacturing processes or their role in the structure of the building, along with the dating of the material.

Among iron artefacts in the cathedral are found staples in the masonry of the tribunes, nave, aisles and upper walls. The restoration works also reveal various tie-rods, dowels, ridge caps and framing irons such as nails, bolted rods or

keyed dowels. The shaping of 28 of these ferrous armatures and the quality of the metal production has been highlighted by metallographic analyses. Artefacts with sufficiently high carbon content were also radiocarbon dated, revealing the different construction and repair campaigns of the cathedral. Slag inclusions were analyzed by SEM-EDS (major elements) to study the iron manufacturing processes and by LA-ICP-MS (trace elements) to look for iron provenance. Trace element composition of slags from 9 archaeological iron production sites in Île-de-France was also determined by ICP-MS. The comparison with the composition slag inclusions of the metal reinforcements enables to propose provenance hypotheses for the supply of Notre-Dame's building yard. These archaeometallurgical studies show a great diversity of provenances and renew our understanding of iron circulation and trade in medieval Paris.

12 A CHRONOLOGICAL APPROPRIATION OF LEAD THROUGH ANALYTICAL, HISTORICAL AND ARCHAEOLOGICAL STUDIES FROM THE CASE OF NOTRE-DAME DE PARIS

Abstract author(s): L'Héritier, Maxime (CNRS - SCTD - 0150; University of Paris 8; ArScAn CNRS UMR 7041) - Baron, Sandrine (CNRS TRACES UMR 5608) - Daussy, Diane (ArScAn CNRS UMR 7041) - Sarah, Guillaume (CNRS IRAMAT UMR 7065) - Azéma, Aurélia (LRMH CRC UAR 3224) - Syvilay, Delphine (Sorbonne Abu Dhabi) - Lestel, Laurence (CNRS METIS UMR 7619)

Abstract format: Oral

The Paris fire at Notre-Dame reminded us of the massive use of lead in the construction of monumental buildings: roofing, sealing of stones and iron fittings, waterproofing elements, decorations and stained glass windows. At Notre-Dame, the archives bear witness to this use over the centuries: more than 200 tons of lead, partly recycled, were used in the 19th century to make the last roof, its cresting and the spire. However, its very low melting point (327°C), its malleability and careful need for maintenance increase the possibilities of remelting and reuse. Thus, several leads from different supply sources and from different implementation phases can coexist in the same structure.

The Notre-Dame CNRS/MC scientific project provides an opportunity to address the issue of the chronological appropriation of lead material throughout the history of the building. The coordination of archaeometric, archival and archaeological studies sheds light on the different lead uses and makes it possible to examine the lead supply markets, the practices of plumbers and their evolution, thus renewing our understanding of the building. About 300 lead artefacts, mainly from the 12th-13th and 19th century campaigns, were sampled in place and from materials recovered from the remains of the burnt-out parts. Trace element chemical analyses by LA-ICP-MS allowed constituting a corpus relevant for the performance of lead isotope analyses by MC-ICP-MS.

The results reveal very different lead supply modalities between the medieval period and the 19th century. For the latter, the archives make it possible to orientate the search for the relevant mining references to be mobilised with regard to the historical context. The isotopic results highlight the combined use of ores mobilised from the large Andalusian deposits (Sierra de Cartagena and La Carolina), thanks to the dynamic Franco-Spanish trade. The elemental analyses also confirm the practice of recycling lead by remelting.

13 GATES TO PARADISE: ANALYSING METAL DOORS AND THEIR WOODEN SUPPORT FROM 11TH-12TH CENTURY CHURCHES

Abstract author(s): Fera, Martin (NOVETUS) - Mödlinger, Marianne - Schlie, Heike - Utz, Judith - Ghiara, Giorgia (IMAREAL, Universität Salzburg) - Negri, Martino - Bontadi, Jarno - Fellin, Marco (CNR-IBE, Trento)

Abstract format: Oral

About 30 bronze doors from the 11th-12th century represent the only surviving complex of large bronzes from the European Middle Ages. Apart three doors in Germany, one in Russia, one in Poland they are all located in Italy, from Sicily to Venice and Verona.

All doors are made of different copper alloys by the lost wax process: they could be cast as a whole, or individual metal fittings were attached to a wooden support. Some doors have inlays of various materials that allowed the coloured depiction of different biblical scenes or saints.

Through comprehensive material analyses of all doors and their wooden support on-site during the course of our project at the University of Salzburg, Austria, we pay particular attention to the characterisation of materials and techniques used in the construction of the doors and how they are implemented in the churches. Moreover, the focus is on the identification of the workshops and artists involved in the construction of the doors, and the wider context from their design to the final mounting of the doors at the church's entrances.

Methods used include 1) image based three-dimensional recording of the doors, documenting the relief structure and surface texture for further studies; 2) non-invasive chemical surface analyses to identify the alloys used; 3) dendrochronological analyses to identify and date the types of wood used, providing important information about restorations, additions and the use of local woods.

The data obtained expand our knowledge of the comprehensive complex of medieval large bronzes, which relate to each other and whose material communicates closely with the meaning of the pictorial representations. We reconstruct the production as well as the cooperation and networks of the individual craftsmen and patrons and thus shed light on an important chapter of medieval craft and art history.

676 INTEGRATING NEANDERTAL LEGACY: RECENT RESULTS OF MULTI- AND INTERDISCIPLINARY RESEARCH [PAM]

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Mihelic, Sanjin (Archaeological Museum in Zagreb) - Janković, Ivor (Institute for Anthropological Research, Zagreb) - Leskovar, Tamara (University of Ljubljana) - Romagnoli, Francesca (Universidad Autónoma de Madrid) - Rivals, Florent (Institut Català de Paleoecologia Humana i Evolució Social)

Session format: Regular session

Neandertals are a pan-European phenomenon and their skeletal remains or cultural evidence of their presence can be found in almost all European countries and further to the Western and possibly Central Asia and stem over a period of more than 200 000 years. This has resulted in vast amount of data on various aspects of their biological evolution and variability, as well as their behavioral aspects. Further, this data has been a subject of numerous studies from different scientific disciplines (i.e. archaeology, anthropology, genetics and so on). Thus, and especially in the light of new technical advancements (new studies using digital and virtual methods, ancient DNA from fossils and/or sediments and so on) allow a new insight into the past events. However, a truly integrated approach to the subject is still missing from Neandertal research.

The main aims of the session are to create a dialogue between scientists from different disciplines and using different approaches to the study of Neandertal legacy (biological and cultural) through presentation of new research and methods, thus promoting better understanding of the overall legacy of this Pleistocene population. Further, this dialogue will help to better evaluate the state of research and its potential for both new research, as well as for presentation and dissemination for general public.

The session is organized in partnership with the network of scholars gathered around COST Action 19141: Integrating Neandertal Heritage: From Past to Present (<https://www.cost.eu/actions/CA19141/#tabs|Name:overview>).

ABSTRACTS

1 UNREVEALING NEANDERTAL LIFESTYLES AT TEIXONERES CAVE: AN EXAMPLE OF A MULTI- AND INTERDISCIPLINARY APPROACH APPLIED TO A MIDDLE PALAEOLITHIC SITE

Abstract author(s): Rivals, Florent - Blasco, Ruth (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; Universitat Rovira i Virgili - URV, Departament d'Història i Història de l'Art) - Rufà, Anna (ICArE-HB – Interdisciplinary Center for Archaeology and the Evolution of Human Behaviour, FCHS – Universidade do Algarve; Univ. Bordeaux, CNRS, MCC, PACEA, UMR 5199) - Rosell, Jordi (Universitat Rovira i Virgili - URV, Departament d'Història i Història de l'Art; Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA)

Abstract format: Oral

Recent advances in archaeological sciences, with the improvement of existing techniques or the conception of new ones, are fostering multi- and interdisciplinary studies for the study of past human behaviour. Multidisciplinary works on Middle Palaeolithic sites indicate a high capacity of Neandertals to adapt to different climatic and environmental conditions, which suggests a significant behavioural plasticity of this human species. In this work, we present the results from the Mousterian site of Teixoneres Cave (Moià, Barcelona, Spain). The geochronological, paleoecological and archaeological studies suggest a highly diverse and changing environment throughout MIS 3, with a combination (or alternation) between animals of temperate and cold environments. Throughout the sequence, Neandertal occupations changed progressively with a loss of territorial (and temporal) stability. In the lower unit IIIb, dated to ~ 50-90 ka, the groups settled intensely in the territory, while in the upper units (IIIa, IIb, IIa; ≤40 ka) the presence is characterised by short-term settlements that alternated with carnivore occupations, mainly by hyenas and cave bears. The recent discovery of human remains allowed for the inclusion of other disciplines, such as palaeoanthropology, proteomics and genetics. Experimental studies are currently developed to better understand the impact of carnivores at the site and the effect of taphonomic processes on the assemblages. Thus, Teixoneres Cave represents a key site to understand the evolution of the Neandertal lineage in the Northeast of the Iberian Peninsula, as well as the evolution of their subsistence strategies starting from the Middle Pleistocene until their disappearance in the MIS 3-2.

2 NEANDERTHALS' MOBILITY AND SITE OCCUPATION IN THE NORTH-EAST OF ITALY: COMBINING ZOOARCHAEOLOGY, DENTAL WEAR AND CEMENTOCHRONOLOGY TO INFER SEASONALITY

Abstract author(s): Livraghi, Alessandra (Universitat Rovira i Virgili - URV, Departament d'Història i Història de l'Art; Università degli Studi di Ferrara, Dipartimento degli Studi Umanistici, Sezione di Scienze Preistoriche e Antropologiche) - Rivals, Florent (Institut Català de Paleoecologia Humana i Evolució Social - IPHES-CERCA; ICREA) - Rendu, William (CNRS - ArchaeoZOOlogy in Siberia and Central Asia - ZooSCAn, CNRS - IAET SB RAS International Research Laboratory, IRL2013) - Peresani, Marco (Università degli Studi di Ferrara, Dipartimento degli Studi Umanistici, Sezione di Scienze Preistoriche e Antropologiche)

Abstract format: Oral

The study of the settlement dynamics and the spatial temporal organization of the human groups during the Middle Palaeolithic has always been a challenging task. A valuable help is offered by the observation of the seasonal organization of the activities and the timing of site occupation, which both document the choice made by Neanderthals in managing the environmental resources. In this scenario, some valuable methods can be applied to teeth, such as the analysis of stable isotopes, the study of tooth eruption and replacement patterns, the dental micro- and mesowear analyses and the cementochronology technique.

With this aim, we integrated traditional zooarchaeological studies with dental wear analyses and cementochronology to molars from large game exploited by the human groups at De Nadale, San Bernardino and Fumane Caves (North-east of Italy). Focusing on the traces observable on the occlusal surface of the teeth and comparing them with samples of extant ungulates, dental wear analyses gave positive results in defining the extent of site occupation. Cementum analysis instead provides information about the seasonality thanks to the observation of the season at death of the game. With the support of recent multi-disciplinary studies on lithic industry, raw material procurement and intra-site spatial distribution the present contribution also gives significant information about the nature of the anthropogenic deposits themselves, characterizing the three sites as short-term occupation, probably linked to a specific season.

Moreover, the present study has been an important testing ground to check the reliability of a new multi-proxies technique that integrates tooth wear analyses and cementochronology. This combined approach allowed us to double-check the results and obtain higher resolution data, overcoming possible lack of information caused by the application of a single technique.

3 NATURAL VS ANTHROPOGENIC LAYERS AT THE LOS ALJEZARES MIDDLE PALAEOOLITHIC OPEN-AIR SITE FINGERPRINTED BY RARE EARTH ELEMENTS SIGNATURES

Abstract author(s): Cuevas-Gonzalez, Jaime (University of Alicante) - Gallelo, Gianni - Eixea, Aleix (University of Valencia) - Díez-Canseco, Davinia (University of Alicante)

Abstract format: Oral

Los Aljezares represents one of the few Middle Palaeolithic open-air sites in the Iberian Peninsula. The data provided from the excavated levels I and II, showed that this site probably was a passage point for Neanderthal population between Mediterranean coast and the interior of the Iberian Peninsula. The low archaeological record is pointing out to sporadic human activities related to lithic procurement, hunting and woodworking. However, the anthropogenic contribution in the development of these levels remains unclear. In order to understand the development history of the levels I and II and the anthropogenic signals in sediments, several samples were taken across six columns and from each section the sampling was carried out at different depths through 1m deep sections. Major, minor and trace elements including rare earth elements were determined employing XRF and ICP-MS. Results were processed employing multivariate statistics and cross-referenced with sedimentological and archaeological data to aid interpretation. The analysis highlights the anthropogenic or natural origin of the majority elements. A correlation between sedimentary layers, facies and REE distribution is shown through the levels. Moreover, an anomaly of phosphorus would be related to biogenic hydroxyapatite most likely linked to the human activity of managing biotic resources. The results show that REE provide interesting details regarding the levels history, and therefore help archaeologists to better understand the occupation, use and abandonment phases of the site.

4 NEANDERTALS, MODERN HUMANS, SAINTS: RECENT RESEARCH AT ROMUALD'S CAVE, ISTRIA, CROATIA

Abstract author(s): Jankovic, Ivor (Centre for Applied Bioanthropology, Institute for Anthropological Research; Department of Anthropology, University of Wyoming) - Komso, Darko (Archaeological Museum of Istria) - Radovic, Sinisa (Institute for Quaternary Palaeontology and Geology, Croatian Academy of Sciences and Arts) - Ahern, James (Department of Anthropology, University of Wyoming) - Becker, Rory (Department of Anthropology and Sociology, Eastern Oregon University) - Oberreiter, Victoria (Department of Evolutionary Anthropology, University of Vienna; Human Evolution and Archaeological Sciences, University of Vienna) - Vidas, Lia (Centre for Applied Bioanthropology, Institute for Anthropological Research) - Pinhasi, Ron (Department of Evolutionary Anthropology, University of Vienna; Human Evolution and Archaeological Sciences, University of Vienna)

Abstract format: Oral

Romuuld's cave in Istria is a well known archaeological site that was visited by many for different reasons. According to the legend, it was a place where St. Romuuld lived for several years around the year 1000, which caused numerous visits by pious inhabitants of the regions in the past. However, archaeological excavations provided evidence that the cave was visited since the Pleistocene. A Mousterian sequence testifies that the site was visited by Neandertals, while the upper layers yielded material from (most likely) two different phases of the Upper Palaeolithic. This is also supported by the recent discovery of the Palaeolithic cave paintings in the main channel of the cave. Here we present an overview of preliminary analysis of archaeological, zooarchaeological, anthropological, genomic, and other of data from the site that will provide a more detailed insight into the site use and behavior of the Pleistocene hunter-gatherers in the region. The research was supported by the Croatian Science Foundation (grants no. UIP-11-2013-7789 and IP-2019-04-7821, PI: Ivor Janković) and the University of Vienna "Mineralogical Preservation of the Human Biome from the Depth of Time (MINERVA)" Research Platform, (PI: Ron Pinhasi).

5 A CRITICAL VIEW OVER THE SEQUENCE OF TABUN CAVE, ISRAEL, AND ITS REFLECTION ON THE LEVANTINE MIDDLE PALEOLITHIC HOMININ POPULATIONS

Abstract author(s): Shimelmitz, Ron (University of Haifa) - Hershkovitz, Israel (Tel Aviv University) - Weinstein-Evron, Mina (University of Haifa)

Abstract format: Oral

Tabun Cave, Mount Carmel, Israel, constitutes a major landmark in the research of human evolution due to its exceptional long sequence and the presence of several hominin remains within the Middle Paleolithic layers, which are attributed to different hominin populations. Thus, it constitutes one of the key localities to address inter hominin group encounters long before occurring in Europe. The Middle Paleolithic sequence that is commonly addressed through a triple division of three superimposed phases, or type industries – 'Tabun D', 'Tabun C' and 'Tabun B' – is the result of the pioneering work of D.A.E. Garrod between 1929-1934. Even a century after, this "classical" sequence is still considered a reference yardstick for the onset and subsequent proliferation of the Levantine Middle Paleolithic. A. Jelinek's excavations at the site during 1967-1971, already demonstrated the high variations along the sequence and provided a wider perspective that combined behavioral and environmental proxies from layers paralleling Garrod's layers C and D. Nonetheless, high-resolution investigation to better grasp and reconstruct the complexity of hominin populations that roamed Mount Carmel during the Middle Paleolithic, addressing their behavioral patterns, episodes of migration and potential interactions, alongside reconstructing the environmental changes, is still much needed. In this presentation we use the results of our new multi-disciplinary excavation project at the upper part of the sequence, Tabun B, that was not excavated since the 1930s, alongside our on-going work on the materials of former excavations at Tabun, to re-evaluate the complexity of the regional Middle Paleolithic sequence and provide a critical review of what we know and do not know of the various hominin populations at this key site.

6 EVIDENCE OF FRESH WATER TURTLE REMAINS IN THE NEANDERTHAL SITE OF BAWA YAWAN ROCKSHELTER, WEST-CENTRAL ZAGROS MOUNTAINS, IRAN

Abstract author(s): Heydari-Guran, Saman (Neanderthal Museum)

Abstract format: Oral

Four seasons of systematic excavations in the Bawa Yawan rock shelter in the West-Central Zagros Mountains, led to the discovery of five geological layers (GH 1 to 5) with hominin occupations from the Middle to Late Paleolithic periods. The lower part of layer two to five in Bawa Yawan have been associated with Middle Paleolithic cultural materials including lithic artefacts, fauna and a Neanderthal tooth. In this section along with significant remains of a wide range of fauna have been found including various herbivores species such as Large and small mammals like Bovidae antilopinae, Ovis/Capra or Gazella and Equidae. Among these faunal remains a significance number of fresh-water turtle bones were found as well. These finds in the Bawa Yawan Rockshelter indicate that the Neanderthals beside their

substance strategies on terrestrial preys, have also focused on diverse food spectrum such as aquatic food sources in this part of the world.

7 THE PROBLEM WITH RECONSTRUCTIONS OF SYMBOLIC BEHAVIOUR IN THE PALAEOLITHIC; HOW DUALISTIC THINKING STILL CREATES PROBLEMS IN THE THEORETICAL FRAMEWORK

Abstract author(s): Kuipers, Karel (Faculty of Archaeology, Leiden; Erasmus School of Philosophy, Rotterdam) - Zwart, Hub (Erasmus School of Philosophy, Rotterdam) - Soressi, Marie (Faculty of Archaeology, Leiden)

Abstract format: Oral

In recent years, the concept of 'symbolic behaviour' has emerged as the defining property of 'humanness', effectively taking the place of 'modern behaviour' in the discussion about hominins' cognitive capacities. While some archaeologists do not give a clear definition of what exactly a 'symbol' is, typically archaeologists tend to favour a definition of the Symbol based on Charles Alexander Peirce's semiotic theory. Yet, if we consistently use his view on how the symbolic sign operates, it is practically impossible to prove whether an archaeological artefact from the Palaeolithic was a symbol or not. In a Peircean definition, identifying something as a symbol relies heavily on the role of the interpretant, a means to interpret a semiotic sign, which is something that is lacking while excavating the Palaeolithic. In an attempt to reconstruct signs from the Palaeolithic, the archaeologists that favour this framework in fact create a parallel sign which may, or may not be a correct reconstruction. In addition, recent studies have shown that animals may be able to exhibit behaviour that could be interpreted as symbolic when the same general standards are applied. These two issues make the concept a questionable marker for humanness, as well as a dubious tool for determining extinct hominins' cognitive capacities. This tension in the theoretical framework could be seen as symptomatic of the underlying dualistic notion that the Symbol would be something Cultural, in direct opposition to Nature.

8 THE NEANDERTAL TRAIL IN ISRAEL; FROM THE MEDITERRANEAN SEA TO THE SEA OF GALILEE

Abstract author(s): Been, Ella (Sports Therapy Department, Faculty of Health Professions, Ono Academic College) - Oz, Avishay (Israel Antiquities Authority) - Barzilai, Omry (Head of South district, Israel Antiquities Authority)

Abstract format: Oral

Israel is blessed with numerous Middle Palaeolithic sites. These were occupied by two types of hominins, Neandertals and Homo sapiens. Diagnostic fossil remains of the two species have been discovered in the Carmel Mountain, Jezreel valley and the Galilee in caves (Neandertals and H. sapiens) and open-air sites (Neandertals). The absolute chronology of the Israeli Middle Paleolithic fossils indicates that H. sapiens existed there between 170 and 90 ka and again from 55 ka on; Neandertals existed in that region between ca. 120 ka and ca. 55 ka. Moreover, the same area also contains human remains from much earlier periods in human evolution. Those include the remains of early Pleistocene hominin fossils (H. erectus sensu lato) from Ubeidiya.

The purpose of the Neandertal trail is to let the passenger/Hiker experience the lives of Neandertals in the Mediterranean woodland by walking between their main occupation sites (caves and open-air sites), water fountains, raw material outcrops, mountain trails, and natural vegetation. The trail will start at the famous Neandertal cave - Kebara, not far from the Mediterranean Sea shore, and will end at Amud cave near the Sea of Galilee. To enhance the understanding of the complexity of Neandertal's lives during the Middle Paleolithic in Israel the trail will pass through the major H. sapiens sites as well (Skhul, Qafzeh) and would include an important visit to the World Heritage Site - 'Nahal Meaorot'. As both Neandertals and H. sapiens have probably evolved from H. erectus sensu lato, the trail will include the major early Pleistocene sites including the open-air site of Ubeidiya.

In our talk, we will present the 70 kilometers trail which will be divided into five segments (one walking day per segment).

A. MICROSCOPIC INSIGHTS WHEN USE-WEAR IS NO MORE. RESULTS OF A MICRO-WEAR ANALYSIS ON CHÂTELPERRONIAN LITHICS FROM QUINÇAY CAVE, FRANCE

Abstract author(s): Leventi, Areti (Leiden University)

Abstract format: Poster

Micro-wear analysis aims to reconstruct what type of activities were performed on archaeological sites and how objects were used (1). By applying this method, our research focuses on exploring the function of Châtelperronian end scrapers from the cave site of Quinçay, in a context associated with the demise of late Neandertals approx. 40.000 years ago (2). Our main questions concern the function of these tools in relation to the impact of taphonomy on use-wear preservation within the stratigraphic sequence.

The micro-wear analysis on 40 Châtelperronian end scrapers from two stratigraphic layers showed use-wear traces on 17 artefacts interpreted as used for scraping hide and bone, whereas the rest of the lithics indicated wear traces related to taphonomic alterations affecting the natural surfaces of the end scrapers (3). We focus on these wear patterns from taphonomic alterations, while assessing the preservation of those artefacts within their stratigraphic context. With both low and high approaches, our final interpretation was conducted in comparison with experimental use-wear traces from a flint reference collection in Leiden University.

In conclusion and related to our research, we emphasize on the need to investigate the Châtelperronian assemblage with such a method, by means of exploring not only the function of these objects or the intra-site activities, but also the potential interconnectivity, and the taphonomic impact in such archaeological context.

B. A JOINT DIGITAL ARCHIVE FOR NEANDERTHAL RESEARCH

Abstract author(s): Riethus, Anna - Auffermann, Bärbel (Stiftung Neanderthal Museum)

Abstract format: Poster

The preservation of archaeological finds and fossils via 3D scanning plays an ever growing important role in today's archaeological research and heritage management. Having an easily accessible platform to upload, share and access international data on tools, fossils, art and comparative material both provides a valuable database for researchers worldwide as well as strengthens our international research community.

Neanderthal Museum in Mettmann, Germany, recognized this development very early on: already in the museum's first mission statement from 1996, the development of a digital database on the cultural heritage of Neanderthals is named as a central task. Its former database project NESPOS established an internationally accessible online database and collected anthropological and archaeological data related to Neanderthal research and human evolution, including 3D scans, CT scans, scanned literature, site information, images and tables.

Since February 2022, the new digital archive of Neanderthal museum continues this task: the archive aims to support researchers worldwide. Our archive specializes on Human fossils, Stone Age Artefacts and Ice Age Art. This poster presents the functions and opportunities of using the archive, highlights advantages for research, and invites the research community to share and expand the collections together.

677 EARLY CHRISTIANITY AND ITS IMPACT ON LIFE DURING THE RISE OF THE FIRST EAST CENTRAL AND NORTHERN EUROPEAN MONARCHIES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Wadył, Sławomir (University of Warsaw) - Szczepanik, Paweł (Nicolaus Copernicus University in Toruń) - Profantová, Nad'á (Institute of Archaeology of the Czech Academy of Sciences)

Session format: Regular session

Christianity had a huge impact on human life during the rise of the first European monarchies. It is indisputable. However the conversion to the new religion was not the same everywhere, and there are numerous premises that early medieval societies were partially pagan long after the conversion had been officially completed. Finally, Christianity dominated the lives of both peasants and the nobility.

Our goal is not to re-discuss the issue of the Christianization of individual regions, but to show the complexity of the phenomenon. We would like to discuss different aspects of the "human side" of early Christian times. Human stories, ranging from the stories of ordinary people to the nobility, give a different perspective.

We are looking for contributions that focus on different topics related to the 'difficult' time of transition. We are expecting a multidisciplinary approach, therefore we invite archaeologists, historians, anthropologists and those examining human remains. Questions could be related to the pace of Christianisation, cremation and inhumation graves in the time of transition; the oldest Christian graves; chamber graves; peasants and the nobility burials at the time of changes; regionalisation of funeral rites; mobility and diet.

Furthermore, we would like to establish a scientific community beyond EAA 2023 with a view to the exchange of knowledge and experiences.

1 CHRISTIAN PAGANS AND PAGAN CHRISTIANS FROM GREAT MORAVIA (CASE STUDY BASED ON FINDS FROM POHANSKO NEAR BŘECLAV)

Abstract author(s): Prichystalová, Renáta - Dresler, Petr - Zlámalová, Denisa (MUNI - Ústav archeologie a muzeologie) - Sládek, Vladimír (Department of Anthropology and Human Genetics, Charles University) - Kalová, Kateřina (MUNI - Ústav archeologie a muzeologie)

Abstract format: Oral

The period of the second half of the 9th and the beginning of the 10th century in the territory of historical Great Moravia was a time of religious eclecticism. This mixture of pre-Christian (Slavic, Indo-European) religious traditions and new principles brought by Christianity can be observed very well in the burial rites of the early Middle Ages in the area of Central Europe. Excellent study material are the church cemeteries and the so-called settlement dispersion burial grounds, which were investigated in the central fortified settlement of Pohansko near Břeclav. The question is what was the relationship between the population buried in the churches and the population buried in the burial grounds in the frame the settlement structures. The number of more than 480 graves discovered outside church cemeteries (559 graves have been discovered in church cemeteries to date) suggests that the relationship between the two populations was mutually tolerant. The conference paper will discuss how burial practices were organised in both populations and how these practices may have been influenced by religious, social, health or chronological aspects. Both classical archaeological, historical and religious approaches will be used, as well as findings from the natural sciences (anthropology, palaeopathology, genetics, stable isotope studies, etc.).

2 EVANGELIZATION ON SELECTED EXAMPLES OF FEMALE GRAVE EQUIPMENT FROM THE 9TH AND 10TH CENTURIES IN MORAVIA (CZECH REPUBLIC)

Abstract author(s): Kouril, Pavel (Archeologický ústav AV ČR, Brno, v. v. i.)

Abstract format: Oral

Findings of the most characteristic tangible evidence of the acceptance of the new faith and religiousness – crosses, are typical almost exclusively of female burials in the grave equipment; exclusively in the infans or juvenis category and not in the group of mature women. In the rural environment of the central regions of Great Moravia, simple cast lead cross pendants equipped with crosshatching decoration evoking the schematized body of the Savior are associated only with these age groups. They are incorporated into necklaces, the dominant element of which are crescent pendants. The crosses are synchronized with the closing decades of the 9th and early 10th centuries. We believe that their prototypes are the simple popular rhombic pendants – amulets passing through many cultures. It cannot be ruled out that in the period of emerging Christianity, their purpose could have been re-evaluated in a new religious context, so that they were tolerated by the church and could supplant classic cross pendants in personal use. It was most likely the crosshatched ornament that gave the pendants a hallmark of a Christian nature, even though they also continued to bear, at least in the initial phase, their original ethos – their original function and significance. As such, one of these primary functions could have been the support and preservation of human reproduction, thus explaining their exclusive occurrence in female graves, in the graves of sexually untouched girls. Exceptionally, a pigeon skeleton appears among other equipment with the buried; we don't know for sure if it is a coincidence or an intention, but the dove is associated with the act of baptism. It can be stated that the reasoning that members of the female sex were subjected to Christianization on a larger scale than the male part of the population may have a real basis.

3 LUDMILA. THE UNSURE PATH OF A PRINCESS TO SAINTHOOD. A CONSEQUENCE OF GENDER OR BAPTISM BY METHODIUS?

Abstract author(s): Profantová, Nadezda (AU - Institute of Archaeology of the Academy of Sciences of the Czech Republic)

Abstract format: Oral

Princess and later a widow Ludmila, the first Czech saint from the Přemyslid dynasty, was murdered in 921 A.D. in Tetin stronghold. I interpret her – as a legend stylised – biography in the context of the dual Christianization of Bohemia (845 A.D. in Regensburg and 882/3 A.D. in Moravia) and the intermezzo of the rich graves in the rivalry between Latin and Old Slavonic tradition. I discuss why she displaced her husband Bořivoj from the traditional role of the prince Christianizationator despite his baptism in Moravia by archbishop Methodius and how to read the wavering beginnings of her cult and its originally local character (Prague, the veil trial in Cosmas' Chronica Boemorum, the absence of churches dedicated to her in the 11th - 13th century). How conveniently did the gender stereotype cover the inappropriate origin of Czech Christianity, and how did gender quicken the overshadowing of her worship by the cult of St. Wenceslas (+935)?

4 THE BEGINNINGS OF INHUMATION IN THE PIAST DYNASTY STATE IN THE LIGHT OF RADIOCARBON DATING

Abstract author(s): Blaszczyk, Dariusz (Faculty of Archaeology, University of Warsaw)

Abstract format: Oral

One of the key issues concerning the Middle Ages in Poland are the beginnings of inhumation, i.e. the use of the so-called skeletal funeral ritual. From the very beginning of their presence on Polish lands, i.e. at least from the 5th - 6th centuries CE, the Slavs practiced the custom of burning their dead at the stake and then placing their remains in urns or pits in the ground. The introduction among the Slavs, but in different areas at different times, of the inhumation is most often associated with the adoption of Christianity. In the case of Poland, it took place, as evidenced by written sources, in the second half of the 10th century, around the year 966.

However, there is a discussion among archaeologists whether inhumation was introduced immediately after the baptism of Duke Mieszko I, or whether it became popular only in the times of his son Boleslav I the Brave. One of the ways to answer this question is to conduct radiocarbon dating of skeletons from the oldest (initial) phases of use of early Christian skeletal cemeteries. In the presentation, the results of ¹⁴C research obtained for individuals buried in elite chamber graves from the area of the early Piast dynasty state will be presented and discussed. Carrying out this type of research resulted from the assumption that in the first phase of Christianization, the new religion was accepted by social elites and only later it spread among the rest of society. Therefore, the oldest Christian burials should be sought among elite graves.

5 TO BE OR NOT TO BE A CHRISTIAN? BURIAL AND STATUS IN 11-12TH C. POMERANIA

Abstract author(s): Szczepanik, Pawel (Nicolaus Copernicus University in Torun) - Wadył, Sławomir (University of Warsaw)

Abstract format: Oral

Early medieval Pomerania is one of the most interesting, but still poorly recognised by archaeologists, areas of the Polish lands. The area was Christianised very early, as evidenced by the establishment of the bishopric of Kolobrzeg in 1000. However, this institution lasted only a few years. The formal Christianisation of Pomerania occurred in the first decades of 12th century after the missions of St. Otto of Bamberg.

The formal diversity of early medieval graves in Pomerania is very high. Despite apparent Christianization, cremation burials are still known, which was a direct manifestation of pagan beliefs. In addition to urn graves, there were also cremation graves of the Alt Käbelich type, referring to the idea of the house of the dead.

In addition, we also know of cremation and skeletal barrow graves, along with their unique type, which are quadrilateral objects of the Orzeszkowo type. From the area of Pomerania, we also know inhumation flat cemeteries. The diversity of graves in these cemeteries is enormous. One of the essential elements is diversity between modest, simple graves without equipment and rich chamber graves. The lasts are connected by scholars directly with Christianisation, but the reality was probably more complex.

The multitude of interpretative problems related to funerary rites mainly concerns the question of belonging the dead to the Christian religion or cultivating pagan traditions. The long persistence of pre-Christian beliefs in Pomerania and contacts with the Christian world through contacts with the peoples of the Baltic Sea and Eastern Europe are evident in the distinctiveness of Pomerania from the Piast's first state. Our proposed analysis of selected elements of Pomeranian funerary rites in the early Middle Ages will allow us to understand the process of the Christianisation of Pomerania and answer the question posed in the title.

6 THE CHRONOLOGY AND SOCIAL STRATA IN THE LIGHT OF RECENT STUDY OF BURROW K8 IN NOWY CHORÓW, POMERANIA

Abstract author(s): Nowosadzka, Ilona (University of Warsaw)

Abstract format: Oral

Early medieval burial sites of "Orzeszkowo" type are characteristic exclusively to Pomeranian area in Poland and its hallmarks are burrows with square shaped base including various stone constructions. They usually contain inhumation as well as cremation graves. The last research of the "Orzeszkowo" type site was conducted in Żydowo between 1967 and 1968 and chronology of the site was based solely on relative dating methods.

Our project is based on 2022 excavations of a site in Nowy Chorów, Słupsk county, and is focused on graves from a burrow K8.

In this paper I will present results of radiocarbon calibrations dating and stable isotopes of carbon and nitrogen method. Using collagen from five inhumation graves we were able to determine an absolute chronology of the burials and correlation between inhumation and cremation burials. Results of stable isotopes of carbon and nitrogen levels gave

us access to information about diet of people buried on the site, possibly giving an insight into the status and hierarchy of the early medieval population in the area.

A. CONVERSION AS RELIGIOUS EXPERIENCE OR REPRESENTATION: THE MEANING AND TRANSFORMATIONS OF CHRISTIAN MATERIAL CULTURE

Abstract author(s): Cechura, Martin (The Museum of West Bohemia)

Abstract format: Poster

The questions of the conversion of early medieval societies and the adoption of Christianity as the main religious system are among the major topics of historical sciences. In the current paper, I will focus on examples of material movable and immovable artefacts that are generally associated with the spread of the Christian faith, and attempt to outline alternative explanations for their occurrence and use. These include, for example, the occurrence of golden metal crosses, small lead crosses, and other objects found primarily in graves. Although these objects are primarily of religious significance, the circumstances of their use and deposition may have other significance. The next category of sources on which I will address identical questions are the earliest sacred buildings. Although churches are primarily intended for the celebration of worship, the circumstances of their foundation and construction may also - or primarily - have other reasons, such as representational ones. This dichotomy continues deep into the medieval and modern periods. However, contrary to the common interpretation that this is a survival of pre-Christian (or pagan) customs, it is much more likely to be a survival of primitive or simplistic Christianity.

678 METALS AND METALWORKING II - ARCHAOMETALLURGICAL NARRATIVES OF THE IRON AND MIDDLE AGES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Saage, Ragnar (University of Tartu) - Wärmländer, Sebastian (Stockholm University) - Neiss, Michael (Uppsala University) - Kmošek, Matěj (Institute of Archaeology of the Czech Academy of Sciences) - Kurisoo, Tuuli (Tallinn University)

Session format: Regular session

Archaeometallurgy is a multidisciplinary field where researchers from different fields, and different traditions, come together to answer questions related to ancient metals and metalworking. Most research in this field is based on metallurgical analysis, but studies involving e.g. experimental archaeology or isotope characterization for material provenancing are also common. In line with the overall theme of the 2023 EAA meeting, i.e. "Weaving Narratives", for this session we welcome full-length papers on all aspects of archaeometallurgy from the advent of the Iron Age to the end of the Middle Ages. Our aim is to focus on how metals and metalworking have contributed to the narratives of past societies. "Narratives" should here be interpreted in a broad sense, both as the stories that we create about the past, and as the stories that past societies have created themselves. As there are many ancient stories and myths involving metals and the transformation and creation of metals, we invite researchers that involve literary and ethnological sources in their research. As many analytical tools have become an inseparable part of modern research, we welcome papers focusing on new methods and interesting materials. Contributions from all geographic regions are welcome and we encourage students and young researchers to present their research projects.

ABSTRACTS

1 FOLD, TWIST, AND MAYBE DRAW - A TALE OF FORGING FINE, BASE-METAL WIRES

Abstract author(s): Mazis, Matasha (Technical University Darmstadt) - Klein, Matthias (Technical University Kaiserslautern)

Abstract format: Oral

Wire-making is an important development in metal technology. In antiquity, wires were used to mechanically fasten materials, form the basic shapes of fine tools, produce chain links, and create filiform ornaments and jewellery. There are accounts of wire production from the medieval period, particularly the important technological step of drawing solid metal into a thin wire, and we have examples of actual draw plates from Roman, European Iron Age, and medieval assemblages. To date much research has gone into the production of ancient wires that are made from precious metals. Few studies have examined the less-ductile base metals that were formed into wires in antiquity: copper alloys and iron are challenging materials for solid wire-drawing, to say the least. In particular, we lack information on the morphologies of ancient wires made from copper alloy or iron. In this paper, we look at the story of ancient wire production so far, previous experimental work on iron wire, and the metallography of several copper alloy wires from the Hellenistic period.

2 OBJECT BIOGRAPHIES OF EARLY MEDIEVAL GOLD BRacteATE PENDANTS: HOW THINGS FALL APART

Abstract author(s): Wicker, Nancy (University of Mississippi)

Abstract format: Oral

Many of the over one thousand extant early medieval Scandinavian gold bracteate pendants are marred in one way or another, showing evidence of pre- and post-depositional damage. Suspension loops may be torn or missing entirely; the gold disks bent, punctured, or fragmentary; and decoration including wire edge rims and repoussé-soldered-additions pulled loose, mutilated, or lost. Additionally, some broken pieces were repaired, which complicates our understanding of methods and materials to construct these objects as well as their use.

In this paper, I focus on studies of bracteate wear and tear to create narratives of how bracteates were used. First, I consider pendants that may have been worn throughout women's lives and then deposited in their graves. These examples often reveal a great deal of wear, which may or may not have been repaired. Carefully placed on the chest of a deceased elite woman, such examples apparently lay undisturbed until excavated archaeologically. I also examine bracteates discovered through settlement excavations and as single finds from agricultural and related activities or through avocational metal-detecting. These finds may reflect both pre- and post-depositional damage. For example, a bracteate that dropped to the ground due to a worn-out suspension loop may be further damaged underfoot soon after loss or any time up to its modern discovery. Methods for distinguishing gradual breakage of gold from long-term wear versus abrupt damage from violent action offer clues to understanding how things fall apart. The myriad conditions in which bracteates are found support diverse object biographies created by archaeologists.

3 ONE BONE AND ONE ANTLER PLATE USED TO DRAW SILVER WIRE IN MEDIEVAL SIGTUNA, SWEDEN

Abstract author(s): Wärmländer, Sebastian (Department of Archaeology and Classical Studies, Stockholm University; UCLA/Getty Conservation Programme, Cotsen Institute of Archaeology, UCLA)

Abstract format: Oral

Metal wire is in modern society produced by drawing metal rods through dies with tapered holes of increasingly smaller diameters. The origin of this wire-drawing technique is unclear. Current evidence suggest that it was invented somewhere in Europe during the 1st millennium AD, replacing earlier techniques for the manufacture of gold and silver wire such as hammering, block twisting, strip-twisting, strip-drawing, and roll-drawing. Clarifying the history of wire production technology is important not only to archaeometallurgists, but also to forensic scientists, as such understanding can help with authentication of antique jewelry with elements of gold or silver wire.

Here, we investigated two possible draw-plates from Old Sigtuna, Sweden's administrative centre during the 11th and 12th centuries. One plate is made from bone, and the other from antler. Both plates display multiple conical holes, and technical examination with SEM-EDS revealed that many of the holes contain silver residue. This shows that both plates were used for drawing silver wire. It is well known that the indigenous Saami population of Northern Scandinavia used (and still use) draw-plates of bone/antler to draw tin wire, which is used in traditional Saami textiles and which has become a signature element in Saami handicraft. Otherwise, draw-plates are typically made from iron, and used to draw wire of harder metals such as copper and silver. To our knowledge, this is the first finding of draw-plates of bone/antler being used to produce silver wire. As the studied bone and antler plate pre-date the Saami tradition of drawing tin wire with tools of bone/antler, the wire-making in Sigtuna may have inspired the later Saami technique.

4 IRON SÁMI - ON THE CONNECTION BETWEEN IRON PRODUCTION, ASBESTOS POTTERY, AND SAAMI LANGUAGE C. 2600 - 1400 CALBP FINLAND

Abstract author(s): Pesonen, Petro (Department of Geosciences and Geography, University of Helsinki; Archaeological Field Services, Finnish Heritage Agency) - Piha, Minerva (Faculty of Education and Arts, Nord University) - Ahola, Marja (Department of History, Culture and Communication, University of Oulu) - Holmqvist, Elisabeth (Department of Cultures, University of Helsinki)

Abstract format: Oral

In this paper we ask if it is possible to connect a special (pre)historical language group and a set of archaeological assemblages. Our focus is on the eastern Fennoscandia during the Late Bronze Age and Early Iron Age (c 2600-1400 calBP). During this period, the area saw the forming of ancestral forms of current Saami and Finnic languages as well as other related languages that have disappeared from the language map of Northern Europe long ago. Our study material consists of archaeological indications of new arrival in the form of asbestos-tempered Luukonsaari and Sirnihta potteries. These vessels sometimes show remains of iron production and are occasionally accompanied with iron production ovens, iron slag and small pieces of iron tools or tool preforms. Chemical compositions of slag, iron artefacts

and ceramics potentially used as crucibles were examined via XRF to characterise and compare iron production at the studied sites. Linguistic evidence is searched via the presence and timing of iron-related vocabulary in relevant Saami languages. We discuss our observations in the context of spreading and distribution of Saami languages and their relation to other Uralic languages of Northern Europe. A further line of discussion concerns the ethnographic accounts of ironworking in the north as well as the distribution of iron-related place names in the vicinity of archaeological sites.

5 OLD FINDS, NEW INTERPRETATIONS: MEDIEVAL BLACKSMITHING IN TARTU (ESTONIA) BASED ON THE ARCHAEOLOGICAL EXCAVATIONS OF THE OLD SMITH STREET

Abstract author(s): Blehner, Marie Anna - Saage, Ragnar (University of Tartu)

Abstract format: Oral

The first quarter of the 13th century was a time of change in Estonia:

the land was ravaged by The Northern Crusades, which – ending in 1227 – started the medieval period. Tartu was conquered in 1224 and a town was built there which became an important center for trading and crafts during the next centuries. Tartu has been archaeologically heavily excavated in the 20th and 21st century. During the old Smith street excavations between 1985 and 1990 ample evidence of metalworking was found and tentatively 28 furnace structures were discovered. Various authors have interpreted these furnaces both as iron smelting sites and as furnaces for non-ferrous metal processing, but sometimes the opinions presented contradict each other or are based on incomplete information. As a result, a new study has been undertaken the aim of which is to find out whether the mentioned furnaces were used mainly for iron smelting, forging, non-ferrous metal processing or some combination thereof. To study this, metallographic analysis, measurements with pXRF, and analysis of the distribution of hammer-scales have been applied. Out of the three, hammer-scale distribution analysis proved to be the most impactful, as it very clearly outlined the areas where forging was done. New and more precise AMS dates have also helped to get a better understanding of the metalworking site, as many of the dates fall into the very beginning of the medieval town. The results of this study give us a better understanding of the types of activities performed in medieval Tartu and highlight the importance of applying new study methods to old finds in order to fully understand the excavated material.

6 TRACES OF COPPERSMITH ACTIVITIES FROM LATE VIKING PERIOD DISCOVERED BENEATH THE NAVE OF STAVANGER CATHEDRAL: AN ARCHAEOLOGICAL INVESTIGATION

Abstract author(s): Gebremariam, Kidane (Museum of Archaeology, University of Stavanger - UiS)

Abstract format: Oral

Diverse non-burnt and vitrified clays, slag-like and corroded metal fragments, acquired from a recent archaeological excavation in the nave of the Stavanger Cathedral, were investigated. The specific type of the metallurgical activity and operational conditions required elucidations based on analyses of composition, morphology and microstructure. The results obtained from the limited selections of samples point to bronze casting at the site. There are strong indicators of operations linked to a coppersmith workshop. Different clay materials with very fine tempers were utilized. Some of them were subjected to low temperatures and the others to very high ones. Microscopic mineralogical and thermal analysis of the different sections of the vitrified clays show attainment of very high temperatures, up to 1100 °C and even beyond. The corroded bronze nodules and fragments investigated are found to be leaded bronze as cast. The microstructural analyses indicated the absence of granular patterns to imply heat treatment following cooling of the molten bronze. The globular and dendritic microstructural features revealed that the bronze materials did not go through hammering or annealing processes. Some signs of the use of cassiterite are identified. Melting from a copper ingot and processing along with cassiterite is a possibility. The combination of the metallurgical evidence of corroded bronze fragments, a possible use of tin source (cassiterite) and the identification of several fragments of diverse clay structures, interpretable as furnaces hearth walls, casting moulds and crucibles subjected to different temperatures, strengthen the claim that bronze production was going on the site. Typological and physicochemical characterizations revealed a one stage technology, not a two-stage technology (furnace based primary smelting followed by melting/refining in crucibles). The metallic and slag-like materials have also offered additional opportunities in terms of gaining insight into the alterations of metals during burials since they are found in corroded states.

7 ROUND AND OVAL BROOCHES IN THE LATE IRON AGE NORTHERN FENNOSCANDIA - THEIR MATERIALS AND USE

Abstract author(s): Puolakka, Hanna-Leena (University of Oulu)

Abstract format: Oral

Only around fifty round and oval brooches are known from the areas of northern Sweden, northern Finland and North-Western Russia from the Late Iron Age (ca. 800–1400 AD). These round and oval brooches are not as common in northern Fennoscandia as they are in the southern regions, and most of them are loose finds.

Of these, the eastern type oval brooches found from the area are sometimes made of an unusually coloured grey metal, and they have historically been described as being made of silver. In recent study and metallurgical analysis, it was found that this was not the case. What does the metal composition of these brooches tell us, and what did it mean to its users? Were these brooches forgeries, made to fool the people of the north and sold as silver? Or was the choice of metal deliberate, with perhaps the colour being the only thing that mattered? Did the color hold a special meaning or a purpose?

When describing metal objects and their value, we often turn to the contemporary knowledge and values, especially with precious metals. In this presentation I will take a novel angle in studying these rare brooch finds, their materials and use in the Late Iron Age northern Fennoscandia.

8 TRASH OR TREASURE? ARCHAOMETALLURGICAL INVESTIGATION OF PRODUCTION WASTE FROM CENTRAL AGGLOMERATION SITE NĚMČICE NAD HANOU (CZ)

Abstract author(s): Kmosek, Matej (Institute of Archaeology of the Czech Academy of Sciences)

Abstract format: Oral

Němčice nad Hanou is a singular settlement site operating as production and exchange supraregional centre. The site is situated in central Moravia (CZ) and had its peak during 3rd and 2nd century BC (LtC1-C2). Except of iron smelting, amber processing and glass production, plentiful evidence of copper-based metallurgy was found especially in a form of semi-finished products and rejects. It is mostly connected to (chain-)belt components, rings and bushings, but also sprues and copper ingots and casting spills are abundant. Through archaeometallurgical research by combination of methods (morphology, microscopy, surface pXRF, bulk ED-XRF analysis, metallography), production waste is investigated. That is uncovering precious information from finds unattractive at first glance, but substantial from perspective of manufacturing techniques of La Tène period, especially concerning casting moulds construction and mass vs. custom production. The metallurgical results are compared with archaeological evidence in the form of distribution maps of finds, which production is documented in Němčice. That is revealing production and distribution networks of La Tène period copper-based metallurgy in central Europe.

9 HANDICRAFT ARCHAEOLOGY BASED ON INTELLIGENT TECHNOLOGY (HABIT)

Abstract author(s): Neiß, Michael (HABIT)

Abstract format: Oral

Thanks to new possibilities in natural and digital sciences, Viking Age scholarship is experiencing an unparalleled renaissance in material research. But when it comes to the question of cultural transformation, some important aspects of ancient metal crafting remain to be explored. The Viking Age saw many “tribal” societies transform into heterogeneous Christian realms with urban centres which sometimes would grow further on into medieval towns. This transformation can be likened to interlocking chains of events that involved a plenitude of agents with different incentives. But the key contributions of the craftspeople to this ideological transformation have long been bound to eschew our grasp – due to some outdated dichotomies that need to be overcome! Although, the scholarly debate on the Viking Era urbanisation process is gravitating towards the significance of different groups of craftspeople, it still remains to be connected with the similarly important debate on urban centres as meeting points for ideologies and religions. What sets Viking Age towns apart from antedating central places is the ever increasing output in standardized utility goods that conveyed pictorial messages. Nowadays, artisans are envisioned as active creators of the cultural universe they inhabit. Many choices within the manufacturing process are culturally conditioned and express a mentality. Thus, an analysis of operational sequences might offer a key to the inner workings of Viking Period society. Certain changes in the artisan habitus that facilitated standardization were not likely caused by new selling opportunities alone, but also by the very gradual mental shifts that contributed to the emergence of a novel ideological superstructure that transformed Scandinavia into Christian realms. It is therefore imperative to analyze the interplay between this cultural change and the habitus of Viking Period artisans, their pictorial messages and how their output was received at different stages of the process.

10 A NEW PROJECT ON CASTING MOULDS FOR JEWELLERY AND DRESS ACCESSORIES FROM HEDEBY

Abstract author(s): Sirkin, Annika (Centre for Baltic and Scandinavian Archaeology)

Abstract format: Oral

This paper presents a post-doc project that just started on casting moulds for jewellery and dress accessories from the Viking Age trading port of Hedeby (Germany). Questions about chronology and relations to the hinterland of Hedeby are attempted to be answered not only on the basis of the moulds, but also on the basis of end products such as Borre style brooches. The aim of this project is to analyse the phenomenon of mass production and the manufacturing

techniques, organisation, trade and politics behind the craft. The hypothesis to be proven is that mass production in Hedeby only starts after the end of the production peak in the nearest trading port, Ribe.

A relatively new method used in this project is 3D scanning to create 3D models of the moulds. With the help of these models, it is possible to fit mould fragments and assign final products to moulds. In conjunction with the ongoing examination of moulds from Ribe (Denmark), the 3D models give the opportunity to form a database for future AI analyses, such as fully automated fittings.

11 LEARNING THE HARD WAY: 45 YEARS OF BLOOMERY IRON SMELTING EXPERIMENTS IN ESTONIA

Abstract author(s): Oks, Kristo - Saage, Ragnar (University of Tartu)

Abstract format: Oral

Bloomery iron smelting was practiced in Estonia from the 1st to early 15th century AD. However, only archaeological sources have remained from this time period. January 2023 marked the 45th anniversary of the first bloomery iron smelting experiment in Estonia, that was conducted indoors. Since then, many different experiments have been carried out, testing different iron ores and furnace types. There have been successful attempts to produce high-quality iron, but most have had disappointing results. But in science, failed experiments are often the most useful because we learn from our mistakes. Our goal is to give a comprehensive overview of the iron smelting experiments in Estonia, to discuss why some experiments have failed and what was learned from them, and to highlight the most successful attempts of iron smelting.

The experimentation can be divided into three periods. The earliest experiments, starting in 1978, were carried out by people with a strong background in engineering, but no practical knowledge of how bloomery iron smelting should be done. The second phase was led by Jüri Peets in the late 80's and 90's, who combined his background in chemistry and archaeology to produce some quantities of iron, but never had an experiment that could be called successful. The third iron smelting wave began a decade ago and used all the knowledge from previous experiments, but also incorporated a lot of experience from practical bloomery smelters from abroad. This combined result has been successful and has elevated the experiments to a completely new level, where the finer points of bloomery smelting can be tested and discussed.

12 HIDDEN RICHES IN THE EARLY MEDIEVAL RHINE DELTA: IRON WORKING AT MEROVINGIAN OEGSTGEEST

Abstract author(s): Heal, Tobias (Université de Liège, Centre Européen d'Archéométrie - CEA; Laboratoire Archéomatériaux et Prévision de l'Altération- LAPA-IRAMT UMR 7065 CNRS UO/UBFC/UPSac and LAPA-NIMBE UMR 3685 CEA CNRS, CEA Saclay) - Dissler, Alexandre - Mercier, Florence (Laboratoire Archéomatériaux et Prévision de l'Altération (LAPA-IRAMT UMR 7065 CNRS UO/UBFC/UPSac and LAPA-NIMBE UMR 3685 CEA CNRS, CEA Saclay) - Sarah, Guillaume (IRAMAT-Centre Ernest Babelon, UMR 7065, CNRS/Université d'Orléans) - Theuvs, Frans (Faculty of Archaeology, Leiden University)

Abstract format: Oral

Increased study of the Early Medieval Rhine Delta has forced a reappraisal of the socio-economic role of the region's rural settlements. Far from isolated backwaters, excavations at these sites have found extensive production and importation of quality goods, some from as far afield as the Mediterranean. However, many aspects of these sites remain poorly understood. This paper focuses on such a site: the 6th-8th century settlement at Oegstgeest (Netherlands) and is particularly interested in the remains of iron working. This study was undertaken with two goals in mind: understanding the techniques and materials available at Oegstgeest and elucidating networks of iron supply available to the settlement. This information was then used to consider the role of the settlement within its wider society. Thirteen iron finds and twenty-three slags were studied using optical microscopy, SEM-EDX and Raman spectrometry. This established the use of quality iron, advanced forging techniques like welding and quenching as well as tandem iron and copper working. The slag inclusions in the iron samples underwent additional analysis to establish the origin of the iron used at the site. This found Swabia in Southern Germany as a likely source for three finds, with a fourth showing a potential match with South-Eastern Belgium. However most samples did not match any of the considered sources of iron. In summary, not only were quality materials and skilled smiths present at Oegstgeest but the settlement fully benefited from its integration in local and regional trade networks.

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OUTSIDE THE CENTERS, EVIDENCE OF HOUSEHOLD LEVEL AVAR IRON SMELTING IN RESOURCE RICH AREAS

Abstract author(s): Mlyniec, Michael (International Archaeological Research Institute Inc)

Abstract format: Oral

Questions surrounding scale of production have always been of great interest to archaeologists, particularly in relation to metallurgy. Large scale production centers are far more likely to be identified, while evidence of small-scale production is much more elusive. Understanding household level production is particularly important in studying nomadic communities and understanding how people interact with the landscapes they travel through. Much is known about large scale Early Medieval Avar metallurgical production centers at Zamárdi, Kaposvár, and Margyartád-Kéri határta dűlő (Górnóri, 2011) however evidence of household production by nomadic groups is also emerging. Small-scale Avar smelting was identified during Rescue Archaeological Research on the Route of the Main Gas Pipeline from the Bulgarian Border up to the Hungarian Border Section 4 on the Municipalities of Kanjiža, Szenta, and Ada.

Excavations at Site 122 located in the Pannonian Basin near the modern town of Kanjiža uncovered evidence of household iron production. A single bloom iron furnace was discovered with a late 7th to mid-8th century Avar house structure. Slag, iron bloom fragments and vitrified furnace lining were recovered in the area. This furnace was constructed in the same style as the furnaces excavated at Zamárdi, however, it appears to have only been used once with evidence pointing to a single discrete smelting event and the subsequent destruction of the furnace. The area surrounding the site contains rich bog iron ore deposits, the identification of which would provide a source of high-quality iron ore for smelting. The knowledge and identification of these resources would provide an opportunity to produce metal for the basic needs of the transitory peoples as they continued to travel across the landscape away from the more established centers.

14

MANUFACTURING TECHNOLOGIES OF DOUBLE-EDGED SWORDS FROM THE 10TH CENTURY CARPATHIAN BASIN - DIFFERENCES, SIMILARITIES AND UNIQUE CASES

Abstract author(s): Tóth, Boglárka (Pázmány Péter Catholic University) - Langó, Péter (Eötvös Loránd Research Network, Research Centre for the Humanities, Institute of Archaeology) - Barkóczy, Péter (University of Miskolc, Institute of Physical Metallurgy, Metalforming and Nanotechnology) - Török, Béla (University of Miskolc, Institute of Metallurgy)

Abstract format: Oral

In 2020 an extensive research has started in collaboration with associates of the Pázmány Péter Catholic University and the Archaeometallurgical Research Group of the University of Miskolc (ARGUM). During the research, twenty double-edged swords were examined by using archaeometrical-archaeometallurgical methods. The primary aims of the research from archaeometrical point of view were the investigation of the microstructure of the sword's blades, the determination and comparison of the manufacturing technologies.

After the preparation, the microstructures of the samples were examined with Zeiss Axiolmager optical microscope (OM; max. 1000X magnification) and Zeiss EVO MA10 scanning electron microscope equipped with EDAX energy dispersive spectroscopy (SEM-EDS). The investigations were completed with Vickers-microhardness test (Instron Wolpert microhardness tester) and, in some cases, energy dispersive X-ray fluorescence spectrometry (ED-XRF – Oxford Instrument X-MET8000).

Among the examined samples interesting manufacturing technologies and microstructures can be distinguished. The most common microstructures, which were found in every blade, are ferrite and pearlite. However, martensite and bainite were also detected but only in few cases. Based on the results of the examinations, it was possible to determine the frequently used forging technologies (e.g. hot forging, folding; forge welding etc.) and reconstruct the different manufacturing steps, moreover, some special cases were observed as well.

This present talk seeks to highlight the differences and similarities among the examined blades, especially the unique cases.

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ON THE CUSP OF CONVERSION: IRON AGE AND EARLY MEDIEVAL METALWORKING FROM NORTH ROSCOMMON, IRELAND

Abstract author(s): O Maolduin, Ros (Archaeological Management Solutions) - Rondelez, Paul (Independent) - Campbell, Eve (Archaeological Management Solutions)

Abstract format: Oral

In 434 AD St Patrick is reputed to have come to the west of Ireland and to have been instrumental in the conversion of its peoples from pagan beliefs to Christianity. The exact timing and processes of conversion are often hotly debated but it is apparent that the societal and technological impacts that accompanied it were profound. On a recent infra-

structure project, the N5 Ballaghaderreen to Scramoge Road Project, Co Roscommon, archaeological sites dating to either side of and occupying the time of this conversion were uncovered, including one that St Patrick is reputed to have personally established. Metalworking, including iron smelting and smithing, and fine metal casting, was identified on habitation and Ecclesiastical sites, in seemingly more remote locations and in funerary contexts. This paper will consider the technological aspects revealed and the changing societal context in which it was carried out and weave this together with literary allusions to the period.

16 **CUTTING INTO NARRATIVES. ROMAN EMPIRE (II AND III CENTURY AD AND BEYOND) ATTITUDE TOWARDS WEAPONRY**

Abstract author(s): Boragno, Lorenzo (Ecole Française de Rome)

Abstract format: Oral

“Quis fuit, horrendos primus qui protulit enses?” (Tibullus Elegiae 1.10).

As ancient historians started looking at warfare as a natural phenomenon and a specifically human phenomenon, weapons became something that defined and distinguished humans from feral beasts. As Tibullus said, we turned into weapons what was originally intended to defend ourselves from beasts.

While the iconic weapons of the Republican times were rightfully considered by Roman authors as important factor of Rome success during the earlier years of its stunning expansion, later historians, both Greek and Latin, went largely silent on the topic, offering very few information on this subject.

While from a modern point of view, technological superiority is a vital winning factor, this idea appears to be flimsy and not fully established in Roman strategic culture.

With a specific focus on the teleological dimension of these narratives, the study proposes to explore how weapons were conceptualized and entered in the public and cultural debate. From the II century AD, inheriting from a military tradition well rooted in the Republican history, Roman military leaders increasingly invested their communication in highlighting military reforms, competent technical decisions, and sporadically addressed technological superiority.

From Hadrian's reforms, mirrored by Arrian's detailed treaty, through Herodian's anxiety about the loss of Roman military superiority, to Dexippus' focus on valour over equipment in his recently recovered pages of his work, the study aims to open a debate on this sometimes neglected subject to appreciate how the Empire conceptualised warfare and technology.

Focusing on historiographical narratives, and using the analytic tool offered by the modern concept of “strategic culture” (here intended as), the present contribution aims to cut into narratives to highlight the “dramatic role” of weapons and armours in historiographical accounts.

A. DATING ARCHAEOLOGICAL BRONZES: MULTIPLE-SCAN VOLTAMMETRY (VIMP)

Abstract author(s): Mödlinger, Marianne - Osete Cortina, Laura (Universität Innsbruck) - Doménech-Carbó, Antonio (University of Valencia) - Doménech-Carbó, Maria Teresa (Universitat Politècnica de València)

Abstract format: Poster

The application of a multiple-scan strategy to nanosamples taken from cross-sections of Bronze Age arms and armour, the surface from Bronze Age tools, as well as recent and Roman coins using the voltammetry of immobilized microparticles (VIMP) methodology is described. The voltammetric responses in contact with aqueous acetate buffer can be attributed to the reduction of cuprite with variable degree of compaction and crystallinity revealing significant differences in the gradient of such properties with depth. The voltammetry study of both metallographic and surface samples of the bronze objects shows correlation with the age of the objects, respectively the period of their deposition. We discuss also (potential) influence of different factors on the VIMP measurements, such as deposition context (soil, water), chemical composition of the copper alloys, and microstructural features (as-cast, annealed, work-hardened), and how to overcome these issues. Specific attention will be paid to the results of currently ongoing research on over 250 bronze objects from the Copper Age to the Modern Era.

B. HOW WERE THEY BENT? THE ART OF DISTORTING A HALLSTATT C PERIOD IRON SWORD

Abstract author(s): Joosten, Ineke (Cultural Heritage Agency of the Netherlands) - van Eijk, Lambert (TU Delft) - van der Vaart-Verschoof, Sasja (National Museum of Antiquities)

Abstract format: Poster

The Chieftain's burial of Oss is one of the richest prehistoric graves in the Netherlands. Dating the Early Iron Age Hallstatt C period, it was uncovered in 1933 during reclamation work on the heath near Oss. Among the grave goods were a bronze situla and an iron Mindelheimsword with gold-inlaid handle. Later excavation revealed that the bronze urn and all it contained had been buried in an already ancient Bronze Age barrow, and then covered with one of the

largest barrows in Northwest Europe, 53 m in diameter. The artifacts were deposited in the bronze vessel and the curled-up sword was placed hilt-down in the middle of the bucket. Given the massive size of the barrow the mourners could have elected to leave the exceptional sword straight and deposit it alongside the bronze urn, but instead the invested time and effort into bending it round. Why? In addition to the sword from Oss, several other bent swords dating to the Hallstatt C period have been found in the Netherlands, for example the sword-grave of Heythuizen and the wagon-grave of Wijchen. The question remains, how were these swords bent, by brute force or by heating and hammering? Could this have been done at the place of burial or was it necessary to bring the sword to a smithy? The aim of this research is to study the technology of bending and folding an iron sword, preferentially by non-invasive methods. Therefore, the structure and composition of the metal (and the corrosion) will be studied through neutron imaging. Fortunately, we could sample one of the swords which enables us to perform metallography to study the structure and composition of the metal and corrosion. The results of neutron imaging will be compared to the metal structure seen in the cross-sections.

682 A GLIMPSE INTO THE INEQUALITIES ALONG THE MARGINS: SURPLUS ECONOMY, TECHNOLOGICAL CHANGE AND TRADE IN THE WESTERN MEDITERRANEAN HINTERLANDS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Nieto-Espinet, Ariadna - Prats, Georgina - Tarongi, Miguel (University of Lleida) - Rovira, Núria (Université Paul Valéry-Montpellier 3; ASM-UMR5140) - Hanot, Pauline (Muséum national d'histoire naturelle - MNHN; CNRS-UMR 7179 MECADEV)

Session format: Regular session

Europe experienced numerous crucial cultural and economic changes between the Late Neolithic and the Iron Age (c. 3200 BC – 150 BC). The specific case of agriculture and animal husbandry in the Western Mediterranean saw a shift from a more diversified and local production to a more specialised and intensive production supplying food products to an emerging demand from Mediterranean markets. This flourishing intra-Mediterranean and cross-European connectivity accelerated the consolidation of social inequalities that were already emerging in earlier periods and progressively oriented local economies towards the potential of new markets. How did the hinterland economies adapt to demographic growth and cope with the increasing pressure on resources? To what extent did the Mediterranean network include the “marginal” hinterland?

The term “marginal” in archaeology mainly serves to refer to lands with low productive capacity far from the central Mediterranean axes of communication. There is a consensus that these areas were remote and passive, the last to be incorporated into more integrated and interconnected economic systems. But was this really the case?

We want to investigate how the economies of the marginal inland areas adapted and integrated into the Mediterranean markets. How is it possible to observe the outset of these more intense and interconnected economies through archaeological indicators? This session will prioritise contributions that identify the processes of intensification of production and the emergence of social inequality from a diachronic and multi-scale approach so as to address the following topics:

- Incorporation of new technological innovations into agricultural production.
- Management of new cultivation areas and the emergence of specialised production.
- Changes in storage capacity and surplus accumulation.
- Changes in the mobility of people, animals and goods between territories.
- Incorporation of animals into agricultural work and transport of goods.
- Interdisciplinary contributions integrating archaeological, bioarchaeological, ethnographic and biochemical data.

ABSTRACTS

1 MARGINS AND CENTER AREAS IN IBERIAN AGRICULTURAL PRODUCTION DURING THE FIRST MILLENNIUM BC

Abstract author(s): Alonso, Natàlia (University of Lleida) - Pérez-Jordà, Guillem (University of València)

Abstract format: Oral

The Iberian Peninsula is located at the western end of the Mediterranean. At the beginning of the first millennium some areas in the south and east were integrated into the commercial system that operated in this sea. Products of agricultural origin occupied a prominent place in this commercial traffic, and in Iberia certain areas focused on cereals and others on the cultivation of fruit trees and the production of wine and oil.

The coastal regions are the first to be integrated into this market, although there are significant differences among the areas. At the same time, there are inland territories that remained on the margins of this commercial activity and certain areas that were integrated to varying degrees. Some of them were limited to receiving products, while others were also producers. Factors such as the existence of communication routes to facilitate the transport of these products, which are generally heavy and bulky, conditioned the socioeconomic characteristics of each territory.

In this paper we will present different realities in coastal and inland areas, mainly in Catalonia, in the Valencian Country, as well as in Andalusia and Extremadura, defining how the new crops were introduced in each of these areas and at the same time defining the degree of integration of each territory in this new commercial reality.

2 BETWEEN LAND AND SEA. PLANT USES BETWEEN „CENTRES“ AND „MARGINS“ IN CATALONIA AND SOUTH-EASTERN FRANCE DURING THE LATE IRON AGE

Abstract author(s): Rovira, Núria (University Paul Valéry-Montpellier 3) - Alonso, Natàlia (Universitat de Lleida)

Abstract format: Oral

The late Iron Age (c. 500-150 BCE) is a crucial period for Mediterranean societies with regard to agricultural production. Archaeobotany is witnessing a wave of new plant species arriving on the Mediterranean coasts with Phoenician, Greek and Etruscan settlers and/or merchants. However, the arrival of new plants does not mean that they will be grown locally, or even adopted for any use by local communities.

In some cases, their cultivation and adoption, from both an economic and socio-cultural point of view, may take time or even not occur at all. If the evolutionary vision considers any new idea, practice and/or product as a witness of human progress and, therefore, fundamentally good to take, we must not ignore the ability to choose that individuals or societies possess. Who decides on these adoptions or refusals? Are they the cause of inequalities within the same society or neighboring communities?

We intend to reflect on these different issues through an approach, both theoretical and practical, using carpological data and different production instruments (millstones, agricultural tools, etc.) found on archaeological sites in Catalonia and south-eastern France. Our main objective is to determine whether these new plant products are also accompanied by new agricultural and consumption practices, as well as to trace their expansion inland. We will also try to identify whether any changes are observed on the different social levels (household, community, extra-community) and between genders.

3 MARGINAL OR CONNECTED HINTERLANDS? A NEW VISION THROUGH ARCHAEOLOGICAL LEGUMES IN THE WESTERN MEDITERRANEAN DURING THE 1ST MILLENNIUM BC

Abstract author(s): Tarongi, Miguel (Universitat de Lleida)

Abstract format: Oral

During the first millennium BC, the Phoenician and Greek colonization processes in the western Mediterranean stimulated important cultural and economic transformations in the local societies. Previous studies show that these changes are observable through the archaeological record.

Archaeobotanical studies have been especially revealing in this sense since they have allowed us to identify important changes in agricultural production. The introduction of new types of crops, such as arboriculture; as well as new technologies such as iron agricultural tools are some of the main indicators of these economic changes. Although the study of agricultural changes linked to colonial influences has already been widely studied, the processes of incorporation of leguminous plants into the diet of local communities are still largely unknown. Although the possible introduction of chickpea cultivation has been noted, it seems that other species appear or increase exponentially in the archaeobotanical record in relation to these contacts.

Interestingly, archaeological seed concentrations of these legume species appear in almost all cases on indigenous sites, while in the colonies these legumes are scarce or even non-existent. This fact has motivated a detailed analysis of the different sites where these seeds are found, in order to establish whether there is a direct or indirect relationship between these indigenous and colonial societies. On the other hand, information from indigenous areas located in the more marginal inland areas, where these legumes seem to be scarcer, has also been compared and integrated. In this paper we will discuss whether these changes in agricultural production were due to the internal needs of indigenous societies or if they were a consequence of colonial influences.

4 SCALES OF SOCIAL INEQUALITY FROM WESTERN CATALONIAN PLAIN (1ST MILLENNIUM BCE): DEMOGRAPHIC GROWTH, AGRICULTURAL EXTENSIFICATION AND LAND STRUGGLES

Abstract author(s): Prats, Georgina - Nieto-Espinet, Ariadna (Prehistoric Research Group - GIP-UdL, Department of History, University of Lleida)

Abstract format: Oral

Between the First and the Second Iron Ages (VIII - I c. BCE), crucial urban planning and architectural changes are documented in the inland valleys of Western Catalonia, characterised by the appearance of the first fortifications with a complex urban structure (VIII c. BCE). These changes occurred prematurely concerning the rest of the neighbouring territories closer to the coastal areas. These first manifestations of power became generalised and consolidated throughout the territory of NE Iberia during the Middle Iron Age (VI-V c. BCE), characterised by a hierarchical system of occupation implemented and the emergence of what Iberian Culture. But was this visible process of territorialisation and the emergence of social differences in these inland areas accompanied by economic intensification before the arrival of the Romans?

Establishing a strategic balance between increasing demographic pressure on resources, the struggle for access to land, and the intensification of economies in response to increasingly integrated markets, may have represented a significant challenge for Iron Age human communities. Likely, increased pressure on arable land is linked to the extensification of agricultural fields, requiring more labour and using draught animals. At the same time, this would reduce grazing areas, encouraging the intensification of livestock management.

Which archaeological proxies probably stem from changes in the productive structure (more extensive) and social organisation (more hierarchical)? How can surplus storage capacity be integrated into the context of social inequalities? What about the workforce? How did livestock farming adapt to these changes locally? Can changes be observed in the management and format of species intended for agricultural work (cattle) and the light transport (equids) of goods at this time? To answer these questions, we will focus on the integrated analysis of the data provided by studying the capacities of storage systems and archaeozoology for the hinterland areas of Western Catalonia.

5 EXPLORING THE INTENSIFICATION PROCESSES OF PROTOHISTORIC HINTERLAND ECONOMIES (EBRO VALLEY): A VIEW FROM THE ANALYSIS OF THE EQUID BONE STRUCTURE

Abstract author(s): HANOT, Pauline (UMR 7179 MECADEV, CNRS/MNHN) - Pallardó Latorre, África - Torra Burgués, Ada - Sánchez Salguero, Xavier - Villalba Mata, Daniel (Departament de Ciència Animal, Universitat de Lleida) - Nieto-Espinet, Ariadna (Grup d'Investigació Prehistòrica, Departament d'Història, Universitat de Lleida)

Abstract format: Oral

Of all the animals to have been domesticated, few influenced human societies as much as equids. By facilitating long-distance transport, they revolutionized mobility, facilitated trades and the spread of cultures. Moreover, they have taken on significant symbolic dimensions in many societies and contributed to transform warfare and agricultural practices. However, whereas particular attention has been drawn to their significance for religion and expression of high-status identity, their economical role is often poorly known.

The Ebro valley, in Northeast Iberia, has yielded high amounts of equid bone remains, providing evidence of continuous and intensive interactions between equids and human populations since the Late Neolithic. Although they are supposed to have contributed to the development of protohistoric economies in the hinterlands regions, their role and management is badly understood. Various archaeological indicators suggest incipient processes of economic intensification in the inland valleys of Northeast Iberia prior to the arrival of Romans. If so, this could have translated into important changes in the uses, management and improvement of species destined for agricultural production and the light transport of goods, such as equids. In that respect, the skeleton is perfectly suited for studying the uses and lifestyle conditions of past animals, as bone structure is an excellent marker of function. Through the CENTAURO project, we investigate equid bone remains from 18 sites in the Ebro Valley dating from the Late Neolithic to the Roman period. Bone structure is characterized both internally and externally to assess the impact of selective pressures and mechanical loadings experienced during individuals' lifespan. Together with zooarchaeological data, our results allow to depict the morphological and functional diversity of the equids from the Ebro Valley to better understand how they have been shaped by human management and have in turn impacted agricultural and economic systems of these inland areas.

6 FROM THE IRON AGE TO HIGH MIDDLE AGES: FOOD CONSUMPTION AND ANIMAL HUSBANDRY FROM INLAND CATALONIA (ST. ESTEVE D'OLIU, LLEIDA)

Abstract author(s): Cajtak, Karl - Asensio Vilaro, David (Universitat de Barcelona) - Cardona, Ramon (Centre d'Estudis Lacetans) - Morer de Llorens, Jordi (Mon IberRocs) - Nadal, Jordi (Universitat de Barcelona) - Valenzuela-Lamas, Silvia (CSIC-IMF)

Abstract format: Oral

Recently, there's been an impressive and concerted effort to analyse the zooarchaeological material of North-Eastern Iberia. This research has shown a strong correlation between changes in the political structure and the livestock production systems (Nieto-Espinet et al. 2021), but much remains to be done for inland areas of Catalunya such as the Solsonès. This paper seeks to characterize changes in animal production and food consumption in the longue durée as well as the evolution of the relationship between people, livestock, and their environment for Sant Esteve d'Olius in the Solsonès. This archaeological site had two main phases of occupation, one during the Iron Age (5-3th c. BCE), and one in the High Middle Ages (10-12th c. CE), both with an important number of excavated structures for cereal storage (silos). This limits the risks of mixed deposits between chronologies. In addition, new radiocarbon dating has been generated and is presented here. When contextualized with other archaeological and zooarchaeological data from North-Eastern Iberia, the zooarchaeological results suggest that the socio-political context had a major influence on animal production and consumption in this area. Moreover, it helps us better understand the potential changes and/or ruptures between the Iron Age and the Middle Ages, as well as potential differences between inland and coastal areas. These changes seem to be confirmed by archaeological excavations and paleoenvironmental data of the site, which do show important changes in the land use and territorial occupation between the Iron Age and the Middle Ages, from a secondary urban nucleus and cereal storage centre to a mostly rural and ecclesiastical settlement after the depopulation of the Late Antiquity.

684 FORENSIC ARCHAEOLOGY IN EUROPE: CONTESTING THE PRESENT

Session theme: 6. Contested Pasts & Presents

Session organisers: Harte, Aidan (Munster Archaeology) - Groen, Mike (Netherlands Forensic Institute - NFI, Ministry of Justice and Security)

Session format: Regular session

Forensic Archaeology can no longer be considered a new sub-discipline and has been successfully applied to criminal and humanitarian cases across the globe.

This session seeks to explore the application of forensic archaeology as a key method in identifying evidence and addressing contested narratives. Of course, all criminal investigations involve contested versions of events, but can archaeology offer definitive proof, recognisable and acceptable by Europe's legal systems? The standard of proof in criminal prosecutions can vary across jurisdictions and the admissibility of archaeological evidence is a critical factor in the application of Forensic archaeology. However, as with other sectors within archaeology, the standards applied, and even recognised accreditation for the specialism, are far from universal.

It is hoped that this will appeal to those practicing forensic archaeology, either in a consultant role or as part of an institution and highlight the commonalities in practice across Europe. It will also be of interest for those archaeologists who have worked in the forensic sector in the past, who may want to know more about the different difficulties encountered and the potential of forensic archaeology as a specialism in the future.

ABSTRACTS

1 UKRAINE: MULTIDISCIPLINARY FORENSIC TEAM APPROACH DURING THE WAR

Abstract author(s): Benthous, Sven (European Training Center DVI & Forensic Sciences ETAF) - Guerra, Rosario (ETAF)

Abstract format: Oral

Shortly after the outbreak of war in Ukraine, the European Training Center of Disaster Victim Identification and Active Forensic Sciences (ETAF) signed a request for support from the Ukrainian Minister of Justice. ETAF's mission is to actively support forensic and medical colleagues in Ukraine with material and training on international standards for victim documentation and identification. Unlike after the conflicts in the former Yugoslavia, this time the international community has already started investigations during the war. The International Criminal Court in The Hague has, for the first time in history, sent a Joint Investigation Team to the scene of the conflict.

In this context, ETAF has initiated a Joint Forensic Support Group to deliver best forensic practise. Within the framework of the Joint Forensic Support Group, the Ministry of Justice, the Ministry of Health and the Secret Service of

Ukraine are involved. After a factfinding mission to Kyiv, Borodianka, Irpin and Bucha at the beginning of 2022, we were able to train the first forensic colleagues from Kyiv in a multidisciplinary way in Miskolc Hungary. This humanitarian course on victim identification was made possible by the Federal Police Hungary. Specialists from Forensic Archaeology, Forensic Anthropology, Forensic Odontology, Law Enforcement, DNA, Forensic Pathology and CSI worked together as a team. International standards (Interpol, Berkely, Minnesota Protocol) were put in context with the criminal procedure code of Ukraine. In the area of recovery and documentation, forensic archaeology is of particular importance.

There must be a paradigm shift in international forensic workflow. Less competition and more scientific teamwork in multidisciplinary teams. Forensic archaeology is an essential team player which needs to fit in international binding standards. (www.etaf-dvi.org)

2 IMPLEMENTING FORENSIC ARCHEOLOGY WITHIN THE SWEDISH POLICE AUTHORITY

Abstract author(s): Hagberg, Christoffer - Olsson, Jesper - Alfsdotter, Clara (Swedish Police Authority)

Abstract format: Oral

The first effort to develop Forensic Archaeology (FA) within the Swedish Police Authority (SPA) took place in the 1990's when a "workgroup for Forensic Archaeology" (AFFA) was created. Since then, FA initiatives have been intermittent at the SPA until the National Forensic Center (NFC) created a first full-time position in FA in 2018. Within the SPA, NFC is responsible for defining and assuring the quality of all forensic processes, now including that of Forensic Archaeology. As of 2023, three forensic archaeologists are employed with development and implementation of FA.

This paper will discuss the implementation of archaeological methods in the Swedish forensic work. That includes the benefits and challenges of working within a governmental authority, such as balancing academic in- and output, development of the forensic process, navigating the Swedish judicial system and seeing to the investigative needs of FA. A major current effort of the Swedish FA work lies in defining the role of FA within the Police authority and to communicate the potential for FA to other police employees in order to maximize the potential of FA and collaborations.

3 THE SIGNIFICANCE OF ARCHAEOLOGICAL EVIDENCE IN UNRAVELING THE MYSTERY OF THE TREBLINKA CAMPS' INDIVIDUAL BURIALS

Abstract author(s): Drath, Joanna (Pomeranian Medical University) - Jarzęcka-Stąporek, Joanna (Museum of the Second World War) - Lisman, Dagmara - Parafiniuk, Mirosław - Ossowski, Andrzej (Pomeranian Medical University)

Abstract format: Oral

Among the Treblinka extermination and labor camp's crew were employed German SS- soldiers and indigenous collaborators, the Wachmanschaften, who outnumbered the Germans, but were extremely loyal and obedient to the Nazis. Because of their mercilessness, they were essential in the execution of the "Operation Reinhard" plan. Since they served as mediators between the captives and the camp's commanding crew, they were subjected to any form of prisoner resistance. It is unknown what happened to their bodies if they died during their service.

During an archaeological survey in 2019 in the area of Treblinka museum, a row of individual burials was uncovered. By the command of the National Institute of Remembrance's prosecutor, a team of experts including archaeologists, anthropologists, medical pathologists and geneticists, were appointed to identify the bodies of the people buried in those graves.

The anthropological analysis revealed that all the deceased were biologically males, the majority of them were under 30 at the time of death, they had European ancestry, and their stature ranged from 157 to 176 cm. On two skeletons were visible perimortem trauma lesions. However, the most crucial in the investigation was the analysis performed by an archaeologist. The results show that the people buried in the graves were interred with honors, which included placing funeral wreaths on top of the coffins. The graves were plundered at certain times after the funerals. From the artefacts found in the skeletons' proximity we may infer, that in the graves were buried guards working in Treblinka extermination and labor camps. Combining the results obtained from all the engaged experts, it is possible to deduce the provenance of the buried victims and their possible cause and manner of death.

4 THE MASS GRAVE PROJECT. USING ACTUALISTIC TAPHONOMIC EXPERIMENTS TO ADVANCE THE INVESTIGATION OF MASS GRAVES

Abstract author(s): Mickleburgh, Hayley (ACASA, University of Amsterdam; Forensic Anthropology Center, Texas State University) - Wescott, Daniel - Gocha, Timothy (Forensic Anthropology Center, Texas State University) - Doro, Kennedy (Department of Environmental Sciences, University of Toledo) - Procopio, Noemi (School of Natural Sciences, University of Central Lancashire) - Gino, Sarah (Department of Health Sciences, Università del Piemonte Orientale) - Ogbanga, Nengi (Forensic Science Research Group, Faculty of Health and Life Sciences, Northumbria University) - Kootker, Lisette (Geology & Geochemistry Cluster, Vrije Universiteit; Co van Ledden Hulsebosch Centre) - Robinson, Eugene (Forensic Anthropology Center, Texas State University)

Abstract format: Oral

Mass graves are complex and extremely challenging archaeological deposits to investigate. They often have high rates of disarticulation and commingling of bodies and personal items. Devising appropriate excavation, documentation and sampling strategies requires deep understanding of how taphonomic processes can modify the archaeological record. Yet, mass grave taphonomy is poorly understood and we have little grip on the variables determining the preservation and spatial patterns of the remains. Actualistic taphonomic experiments can help to refine and test methods used during the investigation of mass graves.

The 'Mass Grave Project' is an interdisciplinary experiment simulating primary and secondary clandestine mass and single graves with whole body donors at the Forensic Anthropology Center, Texas State University. It aims to contribute to the development, testing, and validation of scientific methods for mass grave investigation, by increasing current knowledge and understanding of mass grave taphonomy. The project includes four core research areas: [1] detection and location, [2] (3D) documentation and sampling, [3] biomolecular and biochemical methods supporting human identification, and [4] training – including excavation training and the development of a Virtual Reality training tool. Specific objectives include, among others: refining remote and ground-based detection methods and validating 3D documentation techniques, studying differential decomposition and its impact on evidence, investigating biomolecular and microbial biomarkers for more precise and accurate PMI and age-at-death estimation, studying DNA degradation and transfer in mass graves, and evaluating diagenesis and alteration of isotopic signatures of different human tissues. The project further aims to generate recommendations for documentation, sampling and analysis protocols.

We report on the results of the first phase of the project – the burial and subsequent excavation of the primary graves (May 2021–November 2022)– and discuss their significance in relation to standardization of practice in forensic archaeology and the role of archaeological evidence in different legal systems.

5 FORENSIC ARCHAEOLOGY AND THE HIERARCHY OF PROPOSITIONS: CONFRONTING EQUIFINALITY AND UNDERDETERMINATION IN THE EVALUATION OF ARCHAEOLOGICALLY-DERIVED FORENSIC EVIDENCE

Abstract author(s): Randolph-Quinney, Patrick (Forensic Science Research Group, Northumbria University; Centre for the Exploration of the Deep Human Journey, University of the Witwatersrand) - Basu, Nabanita (Forensic Science Research Group, Northumbria University)

Abstract format: Oral

Forensic Archaeology is the specialist application of archaeological techniques to the search and recovery of evidential material from major crime scenes, and is often but not always related to buried human remains. The discipline has borrowed much in terms of methods of practice from mainstream archaeology, but has yet to develop a significant theoretical basis to deal with evidence evaluation, and in particular competing behavioural forensic hypotheses. This lack of theoretical rigour is perplexing given that forensic archaeology routinely deals with activity level, and sometimes offence level, interpretations of human action in the recent (forensic) past. Perreault in 'The Quality of the Archaeological Record' (2019) has argued that the interpretive processes borrowed by archaeologists operate over very short time scales – so much so that most of them are in fact irremediably affected by both underdetermination and equifinality in the archaeological record. Forensic archaeology on the other hand may circumvent some of these issues in the evaluation and interpretation of past events. This paper will address some of the operational and evidential issues that forensic archaeologists encounter, with particular reference to the hierarchy of forensic propositions, and the explicit use of likelihood ratio and Bayes theorem in evaluating competing behavioural hypotheses. Wider applications to mainstream (non-forensic) archaeology, particularly ways of confronting underdetermination and equifinality in the archaeological record will be discussed.

6 FALLING BETWEEN THREE STOOLS: THE PLACE OF FORENSIC ARCHAEOLOGY WITHIN AN IRISH LEGISLATIVE FRAMEWORK

Abstract author(s): McCullagh, Niamh (-) - Harte, Aidan (Munster Archaeology)

Abstract format: Oral

Ireland has clear procedures in dealing with criminal cases, although Forensic Archaeologists are not part of the Civil Service. Procedures surrounding burials of archaeological interest are also well defined within the National Monuments Acts. Issues occur where unrecorded burials may have criminal or humanitarian implications. A new Institutional Burials Bill has been enacted to deal with such cases. However, it seems unlikely that this will be applicable in every case, thus allowing many searches or forensic excavations to fall between these three legislative pillars.

Following the formation of the Irish state in 1922, responsibility for maternity care of 'unmarried mothers' was given to the catholic church. Thousands of women and children were placed in institutional care from the 1920s to the 1990s. In recent years the Irish state has been confronted with the significant trauma experienced by many who were confined to these institutions known as 'Mother and Baby Homes'. Many infant children died in these institutions and their burials are largely unrecorded and unaccounted for. There are also concerns about cause of death of these infants, in addition to issues around illegal adoption and medical trials.

The question of unrecorded, unregistered, and inappropriate infant burials in such institutions has become a pressing issue in the 21st century. In several cases, it has brought into focus the conflicting interests of three distinct groups - developers wishing to build at these sites, the state which was responsible for the regulation of these institutions, and the survivors whose children may have been buried in these places.

This paper will look specifically at one of these sites and the role that forensic archaeology has played and can play in the investigation of burials at this location. What role, if any, can forensic archaeologists play in mediating this contested past?

7 WHO MAKES THE LAW? THE IMPACT OF LEGAL SYSTEMS ON THE FIELD OF FORENSIC ARCHAEOLOGY

Abstract author(s): Hayes, Hayley (University of Exeter)

Abstract format: Oral

Forensic archaeologists play a key role in criminal investigations, particularly when searching for unknown graves. Criminal procedures place an important part of forensic investigations, forensic archaeologists locating and excavating gravesites and human remains need to have an awareness and understanding of the current regulations used within the country they are working. However, for those who have never studied or know little about them regulations can be confusing. What is accepted as standard practice in one country may not be in another, which can cause evidence to become inadmissible in court. In most cases archaeologists will be expected to abide by the legal system of the country they are in, but in certain cases, such as mass grave investigations are carried out under the laws of the International Criminal Court. The majority of mass graves are the result of conflict and/or human rights atrocities. Despite the implementation of international laws, conflict and the creation of mass graves are still recurring issues today. Whilst crimes under the International Criminal Court are not affected by the statute of limitations, criminal cases worked under domestic law are. Should archaeologists abide by the laws set out within individual nations, or should countries adopt a standard set of procedures to create a more comparable dataset? Therefore, this paper sets out to discuss the differences between domestic and international legal systems, the effect they have on practicing forensic archaeologists.

8 EXPLORING THE GROWING IMPORTANCE OF FORENSIC GEOARCHAEOLOGY IN ITALY

Abstract author(s): Barone, Pier Matteo (American University of Rome; Forensic Geoscience Italy; ANCRIM) - Di Maggio, Rosa Maria (Forensic Geoscience Italy) - Mesturini, Silvia (GORS)

Abstract format: Oral

Forensic geoarchaeology provides a comprehensive and interdisciplinary approach to the investigation of crime scenes. This field combines the techniques and methods of archaeology, geology, geophysics and remote sensing to provide a more complete picture of the events that took place at a site. Forensic geoarchaeologists can provide not only valuable information about the context and environment of a crime scene, but it also can help reconstructing the events that took place as well as collecting relevant information about mispers.

Moreover, the use of geospatial technologies and the analysis of evidence together with a vast range of scientific methods and techniques helps forensic geoarchaeologists to provide compelling and reliable evidence useful in court and by law enforcement agencies.

Despite the fact that there are still some Italian reticence in recognizing forensic geoarchaeology as a fundamental discipline at the crime scene, it is crucial and it is now growing in Italy thanks to the decision of the Italian Standards Organization (UNI) to regulate it together with other criminalistic expertises. Here will be presented not only the path that allowed to get there but also a comparison with the UK experience.

685 RE-INTEGRATING THE ENVIRONMENTAL ARCHAEOLOGY OF EUROPE'S 'WET' AND 'DRY' NEOLITHIC LANDSCAPES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Ballantyne, Rachel (School of Archaeology, University of Oxford) - Bishop, Rosie (Arkeologisk Museum, Universitetet i Stavanger) - Isaakidou, Valasia (School of Archaeology, University of Oxford) - Marinova, Elena (Laboratory for Archaeobotany, Baden-Württemberg Cultural Heritage State Office, Geienhofen-Hemmenhofen)

Session format: Regular session

The environmental archaeology of the European Neolithic is dominated by findings from 'dryland' sites, where biological remains consist of charred plant remains, and faunal and human skeletal remains, enhanced by a growing wealth of biomolecular techniques. 'Wetland' Neolithic settlements (e.g., on lakeshores) are increasingly documented from across Europe and preserve a rich diversity of fragile, uncharred organic remains of plants, from foodstuffs to faeces, alongside rapidly deposited and exceptionally well-preserved charred plant remains and (macro to micro) fauna. To what extent do the contrasts in preservation between these 'dry' and 'wet' Neolithics offer different perspectives on biodiversity, land use and food-related activity?

Papers are invited on 'wet' and/or 'dry' case studies from across Europe, with the goal of this session being to re-integrate and re-contextualise these elements of the European Neolithic. A regional perspective is encouraged in addition to site-specific papers. In this effort, we seek to explore and build on emerging results from the ERC synergy 'EXPLO' project, focused on lakeshore sites in south-east Europe, where significant ecofactual assemblages shed new light on Europe's early farming communities.

ABSTRACTS

1 REHYDRATING SUBSISTENCE PRACTICES AND LIFEWAYS IN THE EUROPEAN NEOLITHIC

Abstract author(s): Ballantyne, Rachel (School of Archaeology, University of Oxford) - de Vareilles, Anne (Historic England) - Rajkovača, Vida (Cambridge Archaeological Unit, University of Cambridge) - Bogaard, Amy (School of Archaeology, University of Oxford)

Abstract format: Oral

The adoption of farming practices in Neolithic Europe, spanning over 2500 years and over 3500 km, transcended diverse topographies, soils, climates, and cultures. In this paper, we seek to 'rehydrate' Neolithic subsistence practices and lifeways with two case studies from the very different archaeological records of eastern Albania and eastern England. In southeast Europe, clear occupation deposits occur at open sites (tells and flat-extended settlements); in northwest Europe food-related refuse is ambiguous and often mixed with 'ritual' remains at pit clusters, monuments and other open sites. Whilst exceptionally preserved waterlogged assemblages occur episodically throughout Europe, we should build from these to illuminate the once widespread freshwater habitats of pools, streams, rivers, lakes, marshes and mires.

At the pile-dwelling settlement of Lin, Lake Ohrid, Albania, (mid/late 6th millennium BC), the EXPLO project has recovered a rich diversity of uncharred and charred plant remains preserved by waterlogging. By building from baseline regional data for topography and soils, a broad distribution of different utilised habitats can be shown moving away from the lakeshore. The results support the growing picture of southeast European Neolithic farming communities that made significant use of wild resources. Inspired by the first case study, we then reconsider Neolithic subsistence patterns and habitats in the Fens of eastern England. This was an extensively 'wet' riverine Neolithic landscape, but the charred plant and animal bone assemblages come from dryland gravel and sand terraces. The emerging results emphasise that watery places and wild resources were integral to early farming communities.

2 CHARRED VERSUS UNCHARRED PLANT REMAINS: HOW WATERLOGGED PRESERVATION CONDITIONS DETERMINE OUR UNDERSTANDING OF SETTLEMENT ECONOMY AND ENVIRONMENT

Abstract author(s): Steiner, Bigna - Akeret, Örne - Kühn, Marlu (Integrative Prehistory and Archeological Science - IPAS) - Vandorpe, Patricia (Institut Català d'Arqueologia Clàssica - ICAC; Integrative Prehistory and Archeological Science - IPAS)

Abstract format: Oral

Circum-alpine Neolithic lakeshore settlements (ca. 4200-2400 BCE) are well-known for their excellent conditions of preservation. Their resulting waterlogged, uncharred organic macrofossils (i.e. seeds and fruits) can provide a detailed insight into past economic strategies and the local environment. Settlements located in the hinterland of the lakeshores generally stem from dry mineral soils where only charred plant macrofossils are preserved. Accordingly, the density of plant macrofossils is much lower and the number of plant taxa is reduced. A comparison between the plant spectra of dry and wetland sites is therefore hardly possible. In this paper, we will focus on an often less explored aspect of the lakeshore settlements: the charred plant assemblage. How does our interpretation of crop plants and environment of a settlement change if we only take the charred plant assemblage into account? How does this compare to contemporary less well-preserved sites? To examine this in more detail, we present a few case studies from Swiss lakeshore settlements with excellent preservation.

3 RECONSTRUCTING MIDDLE NEOLITHIC AGRICULTURE IN THE NORTH-WESTERN MEDITERRANEAN BASED ON WATERLOGGED AND CHARRED PLANT REMAINS

Abstract author(s): Follmann, Franziska (Freie Universität Berlin) - Antolín, Ferran (Deutsches Archäologisches Institut; Universität Basel) - Jacomet, Stefanie - Jesus, Ana (Universität Basel) - Soteras, Raül (Deutsches Archäologisches Institut) - Steiner, Bigna (Universität Basel)

Abstract format: Oral

Neolithic agricultural dynamics in the north-western Mediterranean had a strong focus on free-threshing cereals, which was different from other areas in Europe where glume wheats were prioritized from the Early Neolithic onwards. The current state of research suggests that in southern France free-threshing wheat was the most important crop before an economic threshold around 4000 BC, when glume wheat gained in importance. To what extent the shift in the crop spectrum represents a local or a supra-regional phenomenon has not yet been clarified due to a lack of well-dated and well-preserved sites.

The two Middle Neolithic sites of Les Bagnoles (end of 5th to beginning of 4th millennium BC, France) and Isolino Virginia (end of 6th to beginning of 4th millennium BC, Italy) have yielded waterlogged deposits with excellently preserved plant remains. Our data provides information about the development of the local agriculture at these two sites. The results are being compared to those from dryland sites to generate a broader picture of the regional development in the northwestern Mediterranean as well as to understand the impact of wet and dry preservation on the data.

4 COMPARING THE 'WET' AND 'DRY' NEOLITHIC IN WESTERN MACEDONIA, GREECE: THE ARCHAEOBOTANY OF DISPILIO AND AVGI

Abstract author(s): Ergun, Muge (School of Archaeology, Oxford University) - Gkatzogia, Eugenia - Kotsachristou, Dimitra (Department of Archaeology, Aristotle University) - Margaritis, Evi (Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute) - Bogaard, Amy (School of Archaeology, Oxford University)

Abstract format: Oral

Dispilio is a long-lived lakeshore settlement occupied from the mid-6th millennium BCE on the southern shore of Lake Orestias in Kastoria, western Macedonia. It is so far one of the earliest lakeside settlements known in southern Europe, and it is unique in the Aegean due to its exceptional waterlogged preservation conditions. Recent archaeobotanical research at Dispilio, within the interdisciplinary ERC-Synergy project EXPLOR (Exploring the dynamics and causes of prehistoric land use in the cradle of European farming), investigates newly excavated waterlogged plant assemblages comprising both uncharred and charred material. The goal is to gain a more holistic understanding of the agricultural practices and diverse foodways of the 'mature Neolithic' in this upland setting. The nearby Neolithic dryland site of Avgi, overlapping chronologically with Dispilio, provides the opportunity to compare the 'wet' and 'dry' Neolithic more widely in western Greek Macedonia. This paper presents new archaeobotanical results from both sites and considers their wider implications for our understanding of social and ecological processes in Neolithic lifeways.

5 FARMING AT THE EDGE – NEOLITHIC AGRICULTURAL EVIDENCE FROM THE NESS OF BRODGAR, ORKNEY

Abstract author(s): Timpany, Scott - Haston, Sarah Jane (University of the Highlands and Islands) - Bishop, Rosie (University of Stavanger) - Card, Nick (University of the Highlands and Islands)

Abstract format: Oral

This paper presents the first results of the investigation of archaeobotanical remains recovered during the excavation of the monumental Neolithic ‘house’ site at the Ness of Brodgar, located within the Orkney World Heritage Site. This study focuses on deposits sampled and processed from two of the excavated buildings, Structure 8 and Structure 14. Radiocarbon dates indicate the buildings were in use and contemporary during the Late Neolithic around 3005-2915 cal BCE to 2990-2910 cal BCE for Structure 8 and 3025-2905 cal BCE and 3015-2910 cal BCE for Structure 14. Archaeobotanical information from these structures provides insights into the agricultural practices, foraging activity and fuel resources used by Orcadian Neolithic communities. A charred cereal grain assemblage demonstrates a reliance on naked barley with hints that emmer wheat may also have been cultivated. The wild taxa recovered suggest the use of peat or turf as the primary fuel source with an abundance of heathland species and charcoal comprised predominantly of Ericaceae fragments. The collection of wild foodstuffs is evidenced from recovered pips of crab apple and hazel nutshells, providing important insights for exploring foraging activity as a part of Neolithic life in the north. The archaeobotanical data from the Ness of Brodgar will be explored in the context of other Neolithic archaeobotanical evidence from the Northern Isles and mainland Scotland. The impact of this community on the landscape will also be discussed against the backdrop of larger environmental change occurring during the Orcadian Neolithic using recent palynological studies from nearby wetland sites.

6 WILD WETLANDS AND DOMESTIC DRYLANDS? A METHOD FOR INTEGRATING WET AND DRYLAND DATASETS ASSOCIATED WITH THE EAST ANGLIAN FENS, UK

Abstract author(s): Huisman, Floor (University College Dublin)

Abstract format: Oral

Well-preserved environmental remains from wetland areas are of great palaeoecological significance, providing information on biodiversity, land-use, past economies and subsistence, and allowing detailed reconstructions of human-environment interaction. These rich and relatively rare wetland datasets contrast with often less-well preserved remains from dryland sites, which are more common in European Neolithic archaeology. The higher levels of preservation of wetland datasets frequently result in different sampling strategies and recovery methods, making it even more difficult to compare environmental remains from wet and dry contexts. These differences have not only led to a disciplinary divide between wetland and dryland archaeology, but also to a dichotomy between wetland and dryland sites and communities. For a more detailed and complete understanding of the European Neolithic, we need to consider both wet and dryland sites. Yet how can we integrate the often disparate datasets from these sites?

This paper will present a regional case study focussing on the former East Anglian Fens, once the UK’s largest low-lying wetland area, and its dryland surroundings to demonstrate one way in which divergent ecofactual datasets may be compared. This study recorded and compared the presence and absence of various food remains (wild and domestic plants and animals) from sites in wet and dry environments to reconstruct human-environment interaction through time. Focussing on the Neolithic and Bronze Age (c. 4000-800 BC), some results of this comparative analysis will be presented, alongside a pilot study assessing how differential preservation and various sampling and recovery methods on wet and dryland sites affected the observed patterns. I will reflect on the method’s strengths and weaknesses and briefly discuss its potential applicability in other European Neolithic settings, aiming to demonstrate that the integration of diverse datasets can provide a more holistic understanding of Neolithic life.

7 THE WET AND THE DRY IN THE NEOLITHIC OF GREECE: DISENTANGLING TAPHONOMY, SITE LOCATION AND STRATEGIES OF ANIMAL EXPLOITATION

Abstract author(s): Isaakidou, Valasia (University of Oxford) - Halstead, Paul (University of Sheffield) - Bogaard, Amy (University of Oxford)

Abstract format: Oral

According to current understanding of the Neolithic of Greece, the animal component of land use and diet was based overwhelmingly on the classic farmyard animals – domestic sheep, cattle, goats and pigs – and on mixed exploitation of the three domestic ruminant species for a mixture of meat, milk and (in the case of cattle) traction. This understanding is based on information from a range of site types (open-air settlements of both tell and flat-extended form; caves/rock-shelters) variously situated in riverside or coastal locations or at a distance from such water bodies, while the evidence of animal exploitation exhibits some differences apparently related to both site type and site location. Hitherto, however, faunal data have been derived only from dry depositional environments in which discarded animal

remains were more or less subject to attrition by trampling and scavenging, causing uncertainty as to the severity of losses to fragile categories (e.g., young animals). Drawing on faunal data from late Neolithic (late 6th-mid 5th millennium BCE) waterlogged deposits from the lake-side settlement of Dispilio, NW Greece (collected in the context of the EXPLo project), and on comparative (mainly unpublished) data from 'dry' sites of similar date, this presentation will seek to disentangle differences in zooarchaeological preservation from variation in strategies of hunting and herding.

Preliminary results confirm that, as expected, the Dispilio faunal assemblage is better preserved than its counterparts at contemporary 'dry' sites, but also suggest that its distinctive characteristics in terms of both domestic and wild animal exploitation (e.g., rarity of cattle and pigs; relative abundance of roe deer) are attributable less to its taphonomic history and its upland lakeside location per se than to the nature of human activity at the site.

8 A WATERLOGGED SITE THAT BECAME DRY - IS THIS COMPARABLE WITH DRYLAND SITES? A CASE STUDY FROM SOUTHWESTERN GERMANY

Abstract author(s): Marinova, Elena (Laboratory for Archaeobotany, Baden-Württemberg State Office for Cultural Heritage) - Rosenfelder, Marc (Institute of Prehistory and Archaeology of the Middle Ages, Eberhard Karls University Tübingen) - Nelle, Oliver (Tree ring laboratory Baden-Württemberg State Office for Cultural Heritage) - Ebersbach, Renate (Wetland Archaeology Unit, Baden-Württemberg State Office for Cultural Heritage)

Abstract format: Oral

The settlement of Iznang Unter den Eichen, an early Horgen lakeshore settlement situated on Lake Constance, is characterised by a 1,4 m thick cultural layer with several burning horizons containing numerous well-preserved finds deposited within a few decades (dendro dates 3274 and 3250 BCE). Remarkably, it is located at 396 meters above sea level and thus above the wet shore zone in which wetland sites are preserved today, hence this site represents a former wetland site that became dry. Taking as a starting point this unique constellation, we consider here the overall available archaeobotanical information from 52 samples from different layers and areas and evaluate its taphonomy by considering in detail the depositional context, presence/absence of burning horizons, concentration and diversity of the archaeobotanical assemblages, and specific find categories such as chaff remains, small fragile seeds/fruits etc. The characterisation of this dataset allows to assess the composition of the archaeobotanical assemblages in a quantitative way and will be useful in the future in achieving comparisons with the archaeobotanical assemblages from dryland deposits in the wider region.

9 DROWNING AS THEIR CHANCE TO LAST: EXPLORING THE AGRICULTURAL POTENTIAL OF SUBMERGED NEOLITHIC WETLAND CREEK SYSTEMS

Abstract author(s): Smuk, Ana (Groningen Institute of Archaeology - GIA, Faculty of Arts, University of Groningen) - Schepers, Mans (Centre for Landscape Studies, University of Groningen) - Madella, Marco (Department of Humanities and ICREA, Universitat Pompeu Fabra) - Maurer, Arnoud - Komrij, Tirsia (Groningen Institute of Archaeology - GIA, Faculty of Arts, University of Groningen) - Bakker, Michael (Centre for Landscape Studies, University of Groningen) - Kubiak-Martens, Lucy (Biological Archaeology & Environmental Reconstruction, BIAx Consult) - Familetto, Elena - Cohen, Kim (Department of Physical Geography, Faculty of Geosciences, Utrecht University of Utrecht) - Huisman, Hans (Groningen Institute of Archaeology - GIA, Faculty of Arts, University of Groningen)

Abstract format: Oral

Preservation conditions are a major factor to consider when trying to explain data produced in archaeobotanical analyses. The Finding Suitable Grounds project seeks to identify areas within wetland landscapes that may have been used for arable farming in the Early Neolithic of the Netherlands (5th millennium BCE). The upper part of these farming grounds must have been drained for large parts of the year, which created unfavorable conditions for the preservations of organic remains, compared to more generally waterlogged surroundings. We apply a multi-proxy approach (macro remains, phytoliths, pollen, micro charcoal, micromorphology, sedimentology, geochemistry, and 14C dating) to cored material from a submerged wetland creek system found buried under younger sediments after geophysical mapping. The coring campaign sampled three major landscape elements: creek channels, creek banks (natural levees), and floodbasins. The wetland character of the landscape is sedimentologically evident, but how wet the banks zones in the landscape were throughout a typical year, and what this implies for exploitation suitability, is unestablished.

This contribution will present the investigation results, taking into account differential preservation conditions, as well as the complex formation processes associated with fluvial environments with an open connection to the coast. Following this discussion, we will address the question of whether we should indeed strive for a re-integration of wet and dry landscapes. Simultaneously, we acknowledge that substantial ecosystem variability is to be expected within both of these broad categories and this variability is potentially meaningful from an exploitation potential perspective. The plant remains identified from the wetland areas enable an exquisite opportunity to reconstruct the broader landscape

and its attributes prior to anthropogenic activities, also the human imprints caused by land-use, as parts of the landscape could have offered drier conditions for cultivation within the wetlands.

10 IN THE LAKE AND ON THE SHORE: UNCOVERING NEOLITHIC FOOD PRODUCTION AND LAND USE AT PLOČA, MIČOV GRAD, LAKE OHRID

Abstract author(s): Holguin, Amy (School of Archaeology, University of Oxford) - van Vugt, Lieveke (Institute of Plant Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Brechbühl, Sarah (Institute of Plant Sciences, University of Bern) - Charles, Mike (School of Archaeology, University of Oxford) - Gobet, Erika (Institute of Plant Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Hafner, Albert (Oeschger Centre for Climate Change Research, University of Bern; Institute of Archaeological Sciences, University of Bern) - Tinner, Willy (Institute of Plant Sciences, University of Bern; Oeschger Centre for Climate Change Research, University of Bern) - Bogaard, Amy (School of Archaeology, University of Oxford)

Abstract format: Oral

The Late Neolithic pile-dwelling site of Ploča (Mičov Grad, Lake Ohrid) in North Macedonia, rests within the wetland interface between southern Europe's third largest lake and mountainous deciduous mixed oak, pine and beech forests. Occupying this mosaic environment, the inhabitants of this lakeside settlement had access to a broad range of crops and wild plant resources. Here, we combine on-site plant macrofossil and off-site palynological results, from the EX-PLO project, to explore whether the eco-system diversity of this wetland landscape was reflected in the settlement's food production systems and land-use. The excellent preservation of the plant macrofossils (relating to the main occupation phase lasting c. 120 years and dating to the mid-5th millennium BCE) and detailed off-site palynological dataset (encompassing 8 millennia) offer a rich record of human subsistence and landscape change. We find that the population of Ploča, Mičov Grad used a broad spectrum of edible plants including cultivated cereals and pulses, oil-seed crops and gathered fruits and nuts. We suggest that despite environmental differences, the food-systems of Late Neolithic Ploča, Mičov Grad were broadly consistent with contemporary dryland settlements in the southern Balkans. Using functional weed ecology, we infer that the agrosystem at Ploča, Mičov Grad resembles high-input practices suggesting that cultivation was small-scale and labour-intensive. Our regional vegetation reconstruction shows the resilience of the forests to human disturbances and their fast recovery after land use phases. However, the forest composition did gradually change as a response to land use and logging activities. Such inferences are often not possible due to the preservation conditions of dryland assemblages in the region.

11 TOWARDS AN UNDERSTANDING OF THE NEOLITHIC LANDSCAPE OF THE KORÇA PLAIN, ALBANIA

Abstract author(s): Anvari, Jana (Department of Prehistoric Archaeology, University of Cologne) - Andoni, Edlira (Institute of Archaeology at the Academy of Albanological Studies) - Willett, Patrick (Department of Anthropology, University at Buffalo, SUNY)

Abstract format: Oral

This contribution will present preliminary field data and interpretations from the ongoing project "Contextualising the Neolithic of the Korça plain, Albania". The project researches several Neolithic sites in the Korça plain (6450-3000 BC), some of them 'dry' and some 'wet' insofar as they were situated on the shore of the now disappeared Lake Maliq. The project focuses both on an understanding of the settlement structure and environmental setting of individual sites through surface collection, geomagnetic survey and sondage excavations, as well as an understanding of the Neolithic cultural and natural landscape of the Korça plain on the basis of on-site and off-site data from an intensive survey in the mountains surrounding the plain. Through a better understanding of this important and yet under-researched microregion, we hope to contribute towards discussions of greater issues in southeast European Neolithic research as well as better heritage protection of the sites, which are threatened by modern constructions.

12 FOSSIL INSECTS AND THE NEOLITHIC - FIRST RESULTS FROM DISPILIO, GREECE

Abstract author(s): Panagiotakopulu, Eva (School of GeoSciences, University of Edinburgh) - Kyrillidou, Stella (Dept of Archaeology, University of Thessaloniki) - Bogaard, Amy (School of Archaeology, University of Oxford) - Kotsakis, Konstantinos (Dept of Archaeology, University of Thessaloniki)

Abstract format: Oral

There are limited studies of insect assemblages from waterlogged sites in Greece and the Balkans. Preliminary research from Dispilio provided information on the preservation of fossil insects and new data about the presence of *Sitophilus granarius*, the introduced flightless granary weevil, during the middle Neolithic in northern Greece, providing further data on the spread of storage-based farming from the Near East to Europe. New excavations at Dispilio

have provided the opportunity for sampling of insect remains from various well dated contexts on the excavation. The samples have excellent preservation and provide additional information on cereal pests and living conditions around the lake. This paper will present the first data from the new contexts at Dispilio, will discuss taphonomy and preservation at the site and will reconstruct past environments based on the insect faunas. The assemblages from Dispilio will be compared with other Neolithic assemblages and the spread of farming will be discussed on the basis of the spread of invasive species from their original niches in terms of time and space.

13 **SEDADNA AND WETLAND ARCHAEOLOGY- CHALLENGES AND POTENTIAL: DATA FROM THE STONEHENGE AREA AND SUFFOLK, UK**

Abstract author(s): Hudson, Sam (University of Southampton) - Brown, Tony (University of Southampton; University of Tromsø) - Alsos, Inger (University of Tromsø) - Pears, Ben (University of Southampton)

Abstract format: Oral

The extraction and analysis of sedimentary ancient DNA (sedaDNA) is making an increasing contribution to environmental archaeology from both off-site and on-site contexts, particularly at wetland locations. SedaDNA analysis of two prehistoric archaeological sites in the UK - Blick Mead, in the Avon Valley at edge of the Stonehenge World Heritage Site, Wiltshire (8th- 5th millennium BCE) and Seven Springs, Martlesham, Suffolk (4th – 3rd millennium BCE), highlight the potential of the method for reconstructing plant and animal communities associated with wetland archaeological activity. The importance of small wetlands and springs to Mesolithic cultures is reinforced by the data from Blick Mead, which indicates a damp-meadow environment attractive for the hunting of large mammals and easy access to water. However, at Martlesham, sedaDNA from plants and mammals, alongside pollen and geochemical analysis, reveals evidence for Neolithic pastoral activity in enclosed woodland (forest farming) surrounding a palaeochannel fed by spring activity. This suggests that springs also held significance for Neolithic agro-pastoralists and demonstrates how early farmers may have utilised woodlands for watering holes, additional grazing and fodder. From the environmental and archaeological evidence, both sites are proposed to have begun as a known locations for the hunting of aurochs, with Martlesham later becoming a site for the watering and pasturing of domestic animals. This research indicates that alluvial sediments and peats can preserve DNA from past plant and mammal communities effectively, but will also highlight how potential disturbance of sediment can limit environmental reconstructions using sedaDNA.

14 **LIFTING THE LID ON THE HEBRIDEAN NEOLITHIC: USING ORGANIC RESIDUE ANALYSIS TO RECONSTRUCT FOODWAYS IN WET AND DRY-LAND HEBRIDEAN LANDSCAPES**

Abstract author(s): Brown, Daniel - Cramp, Lucy (University of Bristol) - Garrow, Duncan (University of Reading)

Abstract format: Oral

This contribution will present preliminary results from the analysis of dietary practices of the early farming communities of the Early-Middle Neolithic of the Outer Hebrides, c. 3700-3200 BCE. This project utilises cutting-edge organic residue analysis of pottery lipids from both 'wet' crannog-related contexts and 'dry' domestic settlements and burials/tombs. It also compares the usage of distinctive ceramic assemblages associated with these 'wet' and 'dry' sites. This will allow a greater understanding of the activities taking place at these different sites and their roles in this region at the north western edge of the European Neolithic.

Hebridean crannogs are artificial islets set within lochs. Underwater surveys have recovered archaeological material from the loch-beds surrounding some of these islets and the waterlogged conditions have enabled the recovery of elusive lipid biomarkers for cereals. It has been proposed that these sites were important centres for the formation of community identity via feasting activities. Therefore, by re-constructing the dietary patterns and social role of these sites, the functions and activities taking place at these centres can be explored.

My work extends previous analyses of pottery residues from four Hebridean islets, bringing in additional 'wet' crannog sites for comparison and increasing the representation of key forms of pottery to test hypothesised differences in use. I am comparing these results with pottery from 'dry' domestic settlement sites such as the site of An Doirlinn, and from tombs. By reconstructing and comparing the dietary patterns at these sites, a more detailed interpretation can be constructed for their social role. Comparing the uses of different vessel forms further allows for a greater understanding of specific culinary practices and the relationships between peoples and early pottery in these islands.

FOLLOWING THE STEPS OF PAST SHEPHERDS. SEARCHING FOR PASTORALISM IN MOUNTAIN AREAS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Domingo Ribas, Guillem (Newcastle University) - Garcia Casas, David (Institute of Heritage Sciences - Spanish National Research Council)

Session format: Regular session

Managed grazing systems are regarded as one of the most extensive forms of land use on Earth. Pastoralism has been considered as one of the main causes of landscape transformation in many upland areas, where centuries of livestock mobility have actively modelled the character of the landscape and, in some cases, helped preserve threatened ecosystems.

This session is aimed at sharing how researchers identify past pastoral practices in mountain environments, as well as the problems and challenges emerging from it (e.g., difficulty of locating mobile pastoral sites, scarce material culture, rugged nature of upland areas). In this line, we encourage participants to address the methodological approaches that have enabled them to deal with these issues. Approaches include (but not only):

- Survey strategies (e.g., surface survey, remote sensing)
- Scales of register: from the archaeological site to the object (e.g., how to record dispersed but continuous evidence over mountain spaces, how to delimit a mobile pastoral site)
- Multitemporal approaches (e.g., dating methods, working with different scales of time)
- Ethnoarchaeology and pastoral groups
- Computational archaeology (e.g., computer modelling and simulation, predictive modelling)

In addition, in the face of global warming, depopulation and mass tourism, this session also seeks to generate debate on how archaeological research can inform future landscape planning to maintain and promote sustainable practices in upland areas, such as non-industrialised pastoral systems.

The objective of the session is to share and discuss different methodological approaches that have been successfully applied to the study of pastoralism in mountain areas. Speakers are encouraged to share how common problems in this field are handled in different areas, highlighting the potential of their methodologies. Overall, this session aspires to be a platform to move forward in the research of past pastoralism, while generating proposals for the future of mountain spaces.

ABSTRACTS

1 HUTS, ENCLOSURES AND OTHER DRY-STONE REMAINS. TIME, SPACE AND PEOPLE IN PYRENEAN UPLAND LANDSCAPES

Abstract author(s): Garcia Casas, David (Incipit - Institute of Heritage Sciences) - Gassiot Ballbè, Ermengol (Autonomous University of Barcelona) - Rodríguez Antón, David (Autonomous University of Barcelona; Catalan Institute for Human Palaeoecology and Social Evolution) - Salvador Baiges, Guillem - Díaz Bonilla, Sara - Obea Gómez, Laura (Autonomous University of Barcelona) - Mazzucco, Niccolò (University of Pisa)

Abstract format: Oral

Archaeology in high mountain areas has undergone a strong development in the last 20 years. In different zones of the Pyrenees, as well as in other southern European ranges, numerous research programs have collected a large amount of new archaeological data about ancient pastoral groups. The results show a pastoral use of mountain landscapes since the Neolithic. However, research in these environments and the classification of material remains face some difficulties. The first is dispersion of archaeological evidence which affect the scales of register and the interpretation and, secondly, the scarcity of material culture in the archaeological sites which obstruct the assessment of the function of archaeological sites. Among other questions, these problems make it difficult to build social interpretations about the historical evolution of seasonal pastoralism in high mountain zones.

This paper presents a theoretical and methodological approach based in ethnoarchaeological procedures and computational analysis of the architectural morphology of open-air sites with the aim of classifying the dry-stone shepherd's structures in chronological and cultural terms. The main goal is to elaborate typologies of architectural remains which can help us to identify the historical discontinuities in pastoral landscapes and explaining the social changes over diachronically sequences of time. These proposals have been applied with success in The National Park of Aigüestortes i Estany de Sant Maurici (Catalonia) and nowadays in field research in Ordino (Andorra).

2 PASTORAL LANDSCAPES DYNAMICS, RESOURCE MANAGEMENT STRATEGIES AND SOCIAL ORGANIZATION IN NORTHERN SPAIN BETWEEN THE 18TH AND 20TH CENTURIES

Abstract author(s): Menendez Blanco, Andres (Universidad de Oviedo - Departamento de Historia; Università di Genova - DAFIST, Dipartimento di Antichità, Filosofia, Storia) - Santeramo, Riccardo (Università di Genova - DISTAV, Dipartimento di Scienze della Terra, dell'Ambiente e della Vita) - Stagno, Anna Maria - Panetta, Alessandro - Gago Chorén, Laura (Università di Genova - DAFIST, Dipartimento di Antichità, Filosofia, Storia)

Abstract format: Oral

European mountains have been characterised by productive multifunctionality throughout history. In the modern period, the presence of extensive wooded pastures —usually in common lands— is well documented in many European areas. In this type of landscape, grazing coexisted with the management of other resources such as timber, firewood or charcoal. From the 18th century onwards, the spread of new rationalising ideas brought to a specialisation of these areas, separating forest from pastoral areas. Antigone and TemPa projects aim at deepening our understanding of these transformations by analysing two areas in northern Spain: Asturias and the Basque Country. Both territories show some divergent vegetation and landscape dynamics, which are visible in archaeological surveys, archaeobotanical analysis and written sources. On the one hand, Álava preserves abundant old forests with pollarded trees and evidence of charcoal production. On the other hand, charcoal kilns in Asturias are placed in open areas or in young forests. The aim of this communication is to present the first results of our archaeological and archaeobotanical research of these areas and to reflect on processes behind landscape changes: is deforestation linked to charcoal production or to the abandonment of past multi-practices? Are different management strategies responsible of regional differences? And if so, is there a relationship between these strategies and the social organisation of communities?

3 THE ARCHITECTURE OF PASTORAL STRUCTURES. DATA ARCHIVING AND ANALYSIS THROUGH DIGITAL SURVEY

Abstract author(s): Pizzonia, Lorella (Mediterranean University of Reggio Calabria)

Abstract format: Oral

The research project, directed towards the territorial enhancement and development of the tourism sector, aims to investigate the fields of rural architecture and anthropic modifications produced by pastoral activity in Aspromonte (Calabria, Italy). Through the production of integrated photogrammetric architectural surveys, it is intended to realize a digital archive equipped with a typological and topographic organization of the heritage investigated.

The main objective of the research is to investigate the theme of the architecture of pastoral structures, transhumance routes, enclosures, shelters and the countless anthropogenic changes, produced as a function of pastoral activity in Aspromonte, starting from selected case studies, which allow to capture elements of connection and independence. Connecting material and immaterial heritage to the landscape dimension of the sites hosting these emergencies, it will be possible to have a new system of description and dissemination of memory, expression of the multiple aspects of Mediterranean identity.

Basically the workflow is divided into two phases: the acquisition of data and the production of a digital database.

The first phase starts from the act of 'Observare': observing in order to know better and preserve. It's proceed with architectural surveys to draw new aspects and establish hierarchies. This phase it is accompanied by the consultation of witnesses of the places, to indicate the existing structures and those that are now part of the memory, in order to retrieve valid explanations of their use.

The second phase involves integrating the collected data into a database, with the aim of analysing and comparing the investigated area in a broader context.

The methodology used for the database synthesizes the results of studies and research projects already known in selected areas, and provides for the study area the insertion of the data obtained first-hand.

4 TRANSHUMANCE AND TERRITORIES IN THE FINAL PREHISTORY IN THE SOUTH CENTER OF THE IBERIAN PENINSULA: AN ETHNOARCHAEOLOGICAL AND EXPERIMENTAL APPROACH

Abstract author(s): Moya-Maleno, Pedro R. (Universidad Complutense de Madrid)

Abstract format: Oral

After joining for several seasons one of the last families of transhumant shepherds who move their cows and sheep between the center and the south of the Iberian Peninsula, it is clear that an ethnoarchaeological study strategy from the very experimental nature of the fact allows formulating new approximations to different phenomena and territorial patterns of past eras.

Specifically, of this route of about 400 km between the Iberian System and Upper Andalusia, the passage of cattle through the Sierra Morena mountain range -which separates the Submeseta Sur from the Guadalquivir valley- shows,

first of all, the constant control of the settlements from the Bronze Age to the Iron Age of said mountain passes and surrounding areas. It is about a validity of routes that manifests itself even in the direct control of resting places, drinking troughs and places where cattle spend the night. Thus, it is possible to positively consider whether such current movements allow us to address, on the one hand, other similar movements in such stages of Recent Prehistory that respond to the coincidences and/or cultural expansions between territories apparently separated by mountains. Even more, to project for remote times and from said experienced reality other material, socioeconomic and ideological aspects present in these movements, such as routes, duration of the stages, organization system, socialization mechanisms with local communities, topographic memory, etc.

5 MAKING THE INVISIBLE VISIBLE. SHIELINGS, PASTORALISM AND TRANSHUMANCE IN THE SCANDINAVIAN IRON AND MIDDLE AGES

Abstract author(s): Dahle, Kristoffer (NTNU University Museum; Møre & Romsdal county council)

Abstract format: Oral

The Scandinavian shieling system is well documented through ethnography and represents an important characteristic of traditional upland and outfield landscapes. Based on palaeobotanical analysis it appears as if mountain areas have been exploited – to various extents – since the introduction of domesticated livestock in the Late Neolithic. Yet, the archaeological record of shielings and other transhumant sites is still sparse, both due to their distant location, ephemeral structures and scarce material culture, as well as limited focus within archaeological research and management.

In this paper I will present a step-by-step approach to identifying and delimiting Iron Age and Medieval shieling sites, and how to separate these from other agrarian and pastoral sites in mountain environments. The methodology includes both visual surveys, remote sensing and environmental sampling, offering various possibilities and limitations. Based on my current PhD-study in Møre & Romsdal on the Northwestern coast of Norway, I will also point at some future challenges for pastoral archaeology.

6 THE DEVELOPMENT OF LIVESTOCK STRATEGIES AMONG THE CERRETANI: THE TOSSAL DE BALTARGA SITE (4TH-3RD C. BC)

Abstract author(s): Vila, Oriol (Universitat Autònoma de Barcelona) - Colominas, Lidia (Institut Català d'Arqueologia Clàssica) - Portillo, Marta (Institut Milà i Fontanals. CSIC, Barcelona)

Abstract format: Oral

The archaeological research developed in the Cerdanya region (Oriental Pyrenees) in the last 20 years has allowed to identify the main settlement, social and productive patterns of the Cerretani, the Iberian community living in the Pyrenees. Their settlement patterns show the occupation of the alluvial plain, but also some high lands areas. Recent archaeological research in the “Tossal de Baltarga” site has identified several animals (sheeps, goat, horse, dog) preserved thanks to the main destruction of the site, but also the bioarchaeological remains of their feeding and treatment, in an outstanding example of Iberian Stalls. We will focus on the “Building G”, a two floor house where the souterrain was used as stall, and where we have preserved not only the nearly complete bodies of the animals (4 sheeps, 1 goat, 1 horse) but also the remains of their treatment, thanks to micromorphology studies (identification of the formation processes of dung deposits, from animal nutrition through defecation, trampling and degradation). In the upper floor, we have identified a domestic space where several activities (food processing, cooking, textile) were developed.

From this example we could reconstruct part of the cerretanian livestock strategies.

7 SEARCHING FOR PASTORALISM IN THE SOUTH-EASTERN ALPS

Abstract author(s): milavec, tina (University of Ljubljana) - Horvat, Jana (Institute of Archaeology ZRC SAZU)

Abstract format: Oral

In this contribution we would like to share the results and methodological issues of the last 25 years of research into high mountain archaeology in the Slovenian (south-eastern) Alps. Contrary to previous belief, research, first of the interested public, and later also academic archaeology, has shown that south-eastern Alps have been seasonally used since at least the Mesolithic and more extensively since late Bronze Age.

Through time the settlement remains vary in intensity, certain periods are better represented, while others are lacking. As elsewhere, modest archaeological remains (mainly pottery, more rarely hearths, structures and metal artefacts) make it difficult to conclude what the exact nature of the use was. We expect hunting, medicinal herb gathering, uses of mountain passes, pastoralism and iron ore collecting. Written sources do not mention visiting the high altitudes before the High Middle Ages or a little earlier for the Italian Friuli.

Years of research have shown that particular altitudes and positions in the landscape, vicinity of water sources and other factors were observed and are starting to form a pattern which in the future might be used to predict and interpret the sites.

8 IN THE FOOTSTEPS OF THE FIRST SHEPHERDS IN THE EASTERN PYRENEES: ARCHAEOLOGICAL AND PALEOENVIRONMENTAL CHARACTERIZATION OF NEOLITHIC PASTORAL PRACTICES

Abstract author(s): Pescini, Valentina - Carbonell, Arnau - Colominas, Lidia (Catalan Institute of Classical Archaeology - ICAC) - Égüez, Natalia (Archaeological Micromorphology and Biomarkers - AMBI Lab, Instituto Universitario de Bio-Organica Antonio González, Universidad de La Laguna; Department of Anthropology, University of California) - Mayoral, Alfredo (Catalan Institute of Classical Archaeology - ICAC; Université Clermont Auvergne, CNRS, GEOLAB) - Palet, Josep Maria (Catalan Institute of Classical Archaeology - ICAC)

Abstract format: Oral

Pastoralism has had a central role in the formation and management of Mediterranean mountain landscapes. Yet, only fragmented traces of this millenary practice remain, and they are often difficult to identify and interpret. This contribution presents the results of the archaeological and palaeoenvironmental investigations carried out in the Molleres II site (2.525 m a.s.l.) and its surrounding area of Puigpedrós-Malniu (Meranges, La Cerdanya, Eastern Pyrenees).

A high-resolution multi-proxy research applied both “on-site” and “off-site” is proposed, combining archaeology, soil micromorphology, anthracology and biomolecular analysis together with radiocarbon dating. Such methodological approach allowed to identify the functionality of the pastoral structures and the characteristics of the local palaeoenvironment providing new insights on the occupation dynamics and livestock practices in high mountain spaces starting from the Neolithic onward.

Based on our results Molleres II has been interpreted as a complex and wide open-air site build up by the end of the Late Neolithic (3636-2701BC), consisting of large enclosures entirely dedicated to seasonal animal husbandry, and located at an exceptionally high altitude. These unique settings make this site a primer for this period in the eastern Pyrenees, revealing the considerable intensity of the animal presence since the Prehistory in these highlands. Much later, a second phase of more intense occupation likely occurred during Middle Ages (1179-1434AD), although the animal presence in this mountain area probably never decayed across pre- and historical periods. Our palaeoenvironmental data also suggest that such intense and long-term animal presence possibly accompanied by use of fire could be at the origins of stable grassland-dominated environments and open landscapes that persisted until nowadays.

9 BEYOND MATERIALITY: ETHNOGRAPHICAL AND ECOLOGICAL KEYS TO INTERPRET THE ARCHAEOLOGICAL RECORD OF PASTORALISM AT THE PYRENEAN SUMMER PASTURES

Abstract author(s): Fernández-Piñar, Carlos (Universidad Politécnica Madrid; Institute of Heritage Sciences, Spanish National Research Council)

Abstract format: Oral

Pastoralism has been the main economic activity that has shaped the high mountain traditional cultural landscape. However, the material remains of it are usually reduced to the footings of hundreds of small temporary huts and dry-stone enclosures. These structures usually offer little evidences about the livestock exploitation system to which they were associated and are difficult to interpret.

A multidisciplinary approach can shed new light. Geographical and ecological studies show us that aspects like type of relief, climate and altitude of the grasslands are important to understand the development of diverse forms of livestock management. The type and breed of cattle raised and the productive orientations of animal husbandry have also to be considered. Other sources like the ethnographic and documentary records or place-names can provide valuable information.

This paper points out how the use of different terms to designate pastoral settlements in the summer pastures at the Aragonese Pyrenees suggest diverse herding strategies in the past. Also, the importance of studying documents that regulated the communal use of the uplands is exposed in order to interpret the archaeological record of the pastoral activities in the highlands.

10 COMPUTATIONAL METHODS IN MOUNTAIN ARCHAEOLOGY: OPPORTUNITIES AND CHALLENGES

Abstract author(s): Carrer, Francesco (Newcastle University)

Abstract format: Oral

The use of quantitative approaches and digital tools is well established in the archaeology of mountain landscapes today. In particular, the analysis of the interaction between human communities and upland ecosystems increasingly relies on methods that enable the identification of meaningful patterns and the formal evaluation of alternative scenarios. Cost surface and least cost path, for example, are used to test specific hypotheses on past mobility, which in mountain areas is often associated with the seasonal migration of pastoral groups. Predictive models, which pinpoint locations where sites are more likely to be found, are growing in popularity because they enable effective field surveys in inaccessible areas. Numerical and agent-based modelling, although still rarely applied in mountain regions, are becoming crucial tools for studying the evolution of upland landscapes and their driving forces. Despite the enormous potential of these methods, their use in the mountain archaeology can be problematic. The complex morphology of mountain landscapes affects the estimation of cost parameters and the accurate assessment of the archaeological risk. The seasonal occupation of the uplands must be considered when investigating human-environment interactions in mountain regions. The influence of non-environmental factors on settlement and mobility in the past should not be underestimated. In this paper I will provide examples of these challenges drawn from some of case studies in the Alps, and I will provide some technical and theoretical suggestions to address them.

11 WHAT DOES A ROMAN DO ON TOP OF THAT MOUNTAIN? MICROREGIONAL LANDSCAPE ANALYSIS OF LAND-USE DYNAMICS IN THE EASTERN PYRENEES

Abstract author(s): Carbonell, Arnau - Pescini, Valentina - Colominas, Lidia - Gallego, Abel (Catalan Institute of Classical Archaeology, Landscape Archaeology Research Group) - Mayoral, Alfredo (Catalan Institute of Classical Archaeology, Landscape Archaeology Research Group; Université Clermont Auvergne, CNRS, GEOLAB) - Garcia-Molsosa, Arnau (Catalan Institute of Classical Archaeology, Landscape Archaeology Research Group) - Orengo, Hèctor (Catalan Institute of Classical Archaeology, Landscape Archaeology Research Group; Catalan Institution for Research and Advanced Studies - ICREA) - Palet, Josep Maria (Catalan Institute of Classical Archaeology, Landscape Archaeology Research Group)

Abstract format: Oral

This work presents from a long-term perspective the occupation and land-use of different mountain valleys across the headwaters of Ter and Segre in the eastern Pyrenees, with a special focus on the Roman period. Within a broader Landscape Archaeology approach, we cross-checked palaeoenvironmental (soil micromorphology, anthracology, and biomolecular analysis) and archaeological data (photointerpretation, historical cartography, photogrammetry, extensive survey, test pit digging, and excavation together with radiocarbon dating), in order to characterize socio-environmental interactions. This multidisciplinary approach revealed an intensive land use and anthropization of high mountain environments from the Neolithic but also in Roman times. From this period onwards, the archaeozoological and field survey studies documented an increase in the activity and complexity of livestock practices mainly focused on sheep. This research also characterized forest management, primarily devoted to wood cutting and collecting as well as pitch and charcoal production. In some areas, we found evidence of metallurgical activities, including iron mining and smelting. Structures with a possible connection with administrative activities, such as border controls, were also detected in the area. Our results show a high variability and heterogeneity in land-use dynamics between the different valleys studied, highlighting the relevance of studies at a microregional scale.

12 THE TRACKS OF THE SHEPHERDS IN THE CENTRAL SLOVAKIAN MOUNTAINS

Abstract author(s): Mino, Martin (Monument Board of Slovak Republic)

Abstract format: Oral

Raising livestock is in its very essence an activity that needs a lot of space and grass. Thus the operational area of the pastoralists is far more extensive and restricts overlapping with the neighbours. The nature of pastoral activities results in a low-density settlement structure which is hard to detect. Pastoralists across the centuries have adopted different strategies, even while exploiting the same environment. The further in the past the harder it is to identify the strategies employed and the harder it is to identify pastoralist-related relics on the ground. A combination of various approaches can be a viable solution. Even old pastures long absorbed by woods or built-up areas can offer an insight into past pastoralists' life. Fine pastures were often used continuously for a long time or repeatedly in different time phases. Following recent shepherds, searching for open landscape-grown trees, or evaluating old maps and pictures helps to identify the pastoralist habitat. Old routes across the mountains often might take advantage of shepherd's camps for food supplies and shelter. Thus, route modelling helps scale down the search area for pastoralist settlements. Repeti-

tive walk-through surveys in different conditions of the terrain bring related artefacts. Lidar imagery shows animal enclosures, cabin terraces, livestock drive trails and characteristic land adjustments. Even environmental samples from sedentary settlements can bear information concerning pastoralism. The combination of all these methods brought the first fruit in the identification and closer definition of past pastoralism from Prehistory until the Modern Age in the mountainous zone of central Slovakia.

13 SHEPHERDS, FLOCKS AND PASTURES: ARCHAEO-HISTORY OF PASTORALISM IN A BASQUE VILLAGE (FRENCH PYRENEES)

Abstract author(s): Le couedic, Melanie - Champagne, Alain (Universite de Pau et des pays de l'Adour, Equipe ITEM)

Abstract format: Oral

The shepherd's huts excavated west of the Pyrenees have yielded too little fauna for further analysis of livestock mobility; only petrography has shown, for the Bronze Age, varied patterns of mobility (P. Dumontier and F. Convertini). Beyond the great Pyrenean transhumance circuits traced by geographers at the beginning of the 20th century, we have direct written and planimetric evidence for recent periods, mainly from the contemporary period, for summering at shorter distances. From the Napoleonic cadastre, or from rental leases, we have traced the links between huts and villages, between huts and houses, for the mountainous part of the Basque Country, in Soule and in Cize. Put in series, in space and in graphs, these sources inform us of the sharing, access, paths and possessions in the mountains. Also, from the Middle Ages onwards, neighborhood agreements inform of spaces in compascuity, common to several communities of neighbors in different ways. This raises the question of their spatialization according to toponyms that disappear, move or are deformed through time.

687 HISTORICAL ARCHAEOLOGY OR THE MATERIAL HISTORY OF THE MODERNITY: EXPERIENCING LANDSCAPES AROUND THE FOURS CORNERS OF THE WORLD

Session theme: 6. Contested Pasts & Presents

Session organisers: Muniz, Tiago (Centre Alexandre-Koyré, Centre national de la recherche scientifique - CAK/CNRS) - Oliveros, Johana Caterina (Akademische Rätin, Institut für Archäologie und Kulturanthropologie, Abteilung für Altamerikanistik)

Session format: Regular session

European colonialism created an unprecedented chapter in the history of humanity. Flows of people, plants, animals, objects, goods, knowledge, and ideas took place, however, in a differentiated and unequal way. While positioning the Americas as its production centre, Africa, and Asia as its supply space, within these new geographical articulations, Europe became the centre for profit concentration. Whether during the colonial period in the Americas or the European expansion in Africa along the 19th century, processes of negotiation, adaptation and resistance to colonization generated contexts of interaction and struggle between the social groups involved (e.g., Indigenous, Africans and Europeans), as well as between these and the inhabited environment. In that sense, the making of the modern world, understood as a system of relations, is marked by the simultaneity of material assemblages and experiences related to violence and pain, pleasure or joy, and invention.

Throughout the 19th and 20th centuries colonialism developed additional specificities. It gave birth to new relations of dependency and subjection, now marked by economic dynamics and particular forms of exploitation (e.g., the end of slavery and intensification of smuggling, peonage in rural areas for the exploitation of tobacco, sugar, or rubber). Thus, the advent of what has been called the "Second Slavery" was possible insofar as new conditions were required for the very expansion of capitalism. Within this broad context in mind, we invite colleagues to present their case studies. Some of the questions to address are: Where, when, and how did individuals and groups confront the new conditions of inequality and living? How did the making of the modern world shape new "experiences of being" around the globe? How these analyses help to dimension the limits of modernity and to imaging new possibilities of relation?

1 THE STRUGGLE FOR NATURAL RUBBER SPECIES OR HOW ITS LOCAL PROCESSES AND GLOBAL STORIES MOVED (AROUND) THE WORLD

Abstract author(s): Muniz, Tiago (CNRS)

Abstract format: Oral

The rubber case is probably the best example of botanical colonialism in world history. During the 19th century, it became increasingly common to acquire species from other territories due to the intense circulation of items between metropolises and colonies. In 1876, the Englishman Sir Henry Wickham sent 70,000 seeds of *Hevea brasiliensis* from the Lower Amazon (Pará, Brazil) to the Royal Botanic Gardens of Kew (London, United Kingdom). From this seed transfer, the monopoly of rubber production in the Amazon was threatened by subsequent technological innovations, including the creation of new plants, the organization of plantations, the standardization of cutting techniques, and the organization of labor. As a result, rubber plantations became lucrative investments around the world, with different species and actors involved. The high demand for rubber items for the industry (seals for engines, personal protective equipment, and tires) and medicine (surgical gloves) led to an increasing race for rubber. The decline of the rubber economy in Brazil (1850-1920) impacted rubber tappers and entire villages that were left behind - and we can still read these stories of domination of nature in the landscape. The present research aims to identify, in a broad sense, the types of rubber, companies and historical characters that played an important role in the colonial circulation of plants and knowledge around the world, with a special focus on comparing the efforts of the British and French empires in the struggle for rubber. In this way, the debates here raised concern the history of science and technology, the role of the global south, commodities, globalization, and the environmental humanities. Through archaeology of rubber, it is still possible to stimulate a critical vision of the impacts of commodities worldwide, taking into account the perceptions of the environment in communities impacted by its industry and heritage.

2 TRANSMODERNITY AS A MODEL FOR IMAGINING PLURIVERSAL RELATIONS - INSIGHTS FROM THE AFRICAN 'PERIPHERY'

Abstract author(s): Bialostocka, Olga (Human Sciences Research Council)

Abstract format: Oral

Nzima village in Grand-Bassam and Abbashawl in Asmara were intrinsically connected to the 'modern' colonial capitals of present-day Côte d'Ivoire and Eritrea, respectively, on the verges of which they functioned. However, structurally, organisationally and ontologically, they profoundly differed from their French- and Italian-planned 'neighbours', together with which they are today inscribed on the UNESCO World Heritage List. Interpreted as antithetical counterparts, products of African encounter with modernity, the two urban entities – European and African – tend to be described as interdependent, representing two sides of the same coin, neither of which could have existed without the other. This paper interrogates the said interpretation using decolonial concept of transmodernity that offers a possible conceptual framework to understand experiences of being of the colonised outside of the colonial hierarchisation and the core-periphery dynamic created by the politics of modernity.

What can be said about approaches to colonisation applied by the French and the Italians based on the analysis of architecture and urban planning in the two cases? How was separation and exclusion in Grand-Bassam and Asmara instituted by the coloniser? And what did it mean for the relations between the Europeans and the African populations? The paper proposes to look at Nzima village and Abbashawl urban development using affirmation of difference lens to visualize reality that contests the 'universalistic' binaries created by Western modernity in seeking pluralistic politics.

3 ARCHAEOLOGY OF THE DOMESTIC SPACE: ASYMMETRIC DEPENDENCIES AND TACTICS OF RESISTANCE IN SAN BASILIO DE PALENQUE. COLOMBIA. 19TH-20TH CENTURIES

Abstract author(s): Mantilla Oliveros, Johana (Department of Anthropology of the Americas)

Abstract format: Oral

In this presentation, I analyse three architectural models of houses in the Afro-Colombian community of San Basilio de Palenque. Initial field research points to developments in domestic spaces, each related to specific contexts of social, economic, and cultural transformations. Original domestic formations, for example, date from the early stages of the emergence of this maroon community. Another form of house spread in the 19th century when slavery was still legal but was increasingly embedded in industrialization processes due to new labour regimes such as peonage. Eventually, a third form of domestic space appeared from the 1960s onwards with the arrival of electricity and increased migration to cities. The persistence of specific spaces and their use suggests an internal process of resistance to change. The archaeological analysis of domestic spaces in San Basilio de Palenque provides insight into how af-

ro-descendant populations in rural areas of the Americas deal with contexts of asymmetric dependencies during the transition from colonialism to industrialization.

4 NETWORK HIERARCHIES AND SOCIO-ECONOMIC STRATIFICATION IN RUSSIAN AMERICAN SETTLEMENTS

Abstract author(s): Rendt, Victoria (University of Aberdeen)

Abstract format: Oral

Archaeological assemblages of ceramics from 18th and 19th century Russian American sites have predominantly been studied independent of other sites within the Russian American network. In this paper I explore potential connections and patterns across sites, using examples from Fort Ross, California; Kodiak Island, Alaska; and Sitka, Alaska. These locations were all of great significance in the development and expansion of the Russian American Company. Through cross-referencing ceramic assemblages, and studying the composition and the location of certain goods within selected sites, the aim is to improve our understanding of the hierarchy of settlements within the network. Network hierarchies are important as they have the ability to influence the socio-economic stratification of the occupants located in and around the settlements. How does network status affect access to goods being transported between settlements? How is access reflected in the resulting variation in the ceramic assemblages? And, importantly, what does this variation say about the social affordances of the ceramics and the status of the occupants? By using ceramics as a material lens and moving beyond individual sites, I argue that a wider understanding of the Russian American network becomes possible – one that can help us answer questions about whether access to goods led to the polarization of socio-economic status or a quasi-socialist distribution of goods among occupants.

5 THE SEEDS OF CHANGE: APPLE TREES AND HUMAN MIGRATIONS

Abstract author(s): Hull, Emily (University of Idaho)

Abstract format: Oral

Apples have a long history in the human imagination, from golden apples and apples of youth in European legend to figures of mythological stature such as Johnny Appleseed in North America. Originating in Eurasia, ancestral apple forests still dot the lines of the Silk Road in Kazakhstan, and volunteer apples from cores cast out of train windows delineate now-deserted railway lines across the North American West. Abandoned homesteads may now be identified only by venerable apple trees, remnants of Euroamerican human settlements.

This study aims to identify and use apples, apple trees, and apples varieties, in conjunction with landscape archaeology and historical archaeology, to trace human movement, culture, and culinary trends. These apple trees symbolize not only the hopes of disenfranchised homesteaders, but also trace the lines of colonial incursions into western North America. Not only do the trees show migration, they also remain standing and are accessible to visitors and locals, as well as wild animals who use these symbols as food and symbol. This study aims to look at the living apple trees in all their complexity, as both a symbol of hopeful futures, and the sign of colonialism and land theft, as well as exploring how these plants can remain as accessible, living histories to communities in the present.

688 BIOARCHAEOLOGY OF GIRLHOOD, MAIDENHOOD, AND MOTHERHOOD IN PAST SOCIETIES. RECONSTRUCTING WOMEN'S LIFE-HISTORY THROUGH MORPHOLOGY, HISTOLOGY, AND BIOGEOCHEMISTRY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Gigante, Melania (University of Padua) - Nava, Alessia (Polish Academy of Sciences)

Session format: Regular session

From an evolutionary and biocultural perspective, reconstructing biological life histories in humans – e.g., growth trajectories, health, mobility, diet, reproductive behaviours, fertility and mortality rates – has been crucial for understanding how ancient populations adapted to ecological, cultural and social changes over time. While the use of analytical tools from life history theory and the application of cutting-edge techniques in the study of ancient human remains have allowed us to explore many aspects of past human biology, women's reproductive life histories in ancient human populations have received scant attention. Consequently, relatively little is known about the evolution of female reproduction in past societies or how transitions from maidenhood to womanhood to motherhood changed through time.

This session invites state-of-the-art bioarchaeological research on women's life histories, mother-infant dyad, adolescence, and female rites of passage. The aim is to explore the nature and timing of female puberty, childbirth and womanhood in past societies. We welcome papers which use morphological and/or histological and/or biochemical

analyses of human mineralised tissues (bones and teeth) from ancient women and their offspring in order to explore variability in the timing of female puberty, women's reproductive histories and womanhood across human history.

ABSTRACTS

1 RECONSTRUCTING REPRODUCTIVE LIFE-HISTORIES IN YOUNG GIRLS. ASSESSMENT OF THE AGE-AT-MENARCHE IN HUMAN MINERALISED TISSUES: A HISTOLOGICAL AND BIO-GEOCHEMICAL APPROACH

Abstract author(s): Gigante, Melania (University of Padua) - Nava, Alessia (Geochronology and Isotope Geochemistry Laboratory, Institute of Geological Sciences, Polish Academy of Sciences) - Bondioli, Luca (Department of Cultural Heritage, University of Padua) - Müller, Wolfgang (Institute of Geosciences, Goethe University Frankfurt; Frankfurt Isotope and Element Research Center - FIERCE, Goethe University Frankfurt)

Abstract format: Oral

Menarche, or the first menstruation, is a crucial milestone in women's reproductive life history. As an adaptive response serving to maximise reproduction opportunities, age-at-menarche in young girls is determined by a complex interplay of genetic and environmental factors. Clinical studies on living populations have documented a persistent relationship between intra-uterine milieu, childhood, and psycho-social stressors, with variations in timing of reproductive maturity and physiological growth. Variation in the age-at-menarche is thus a sensitive measure to estimate female health in general and the impact of changes in environments and human behavioural choices on women's life history across space and time.

However, whilst secular trends of the age-at-menarche in women from contemporary societies are well-known to physiologists, there are large gaps in our knowledge of how female puberty and reproductive life history in women changed in recent human evolution.

Traditional bioarchaeological approaches to puberty's reconstruction rely upon skeletal and dental maturation, although with a few limitations. Recent studies on modern primates' samples – with known life-history information – have shown the potential of permanent teeth to histologically detect the menarche as accentuated increments in dental microstructures. However, little research has been conducted on past human dental specimens.

This paper illustrates the state-of-art of bioarchaeological research on puberty and menarche in human mineralised tissues. We present the preliminary results of the chemical investigation of menarche in human tooth enamel as part of a pilot study. Using dental histology and LA-ICPMS (laser-ablation inductively coupled plasma mass spectrometry), we identified variations in Sr/Ca and Ba/Ca elemental profiles at the known age-at-menarche in human extracted third molars. This result opens up an unexplored way to unravel the timing of the first menstruation in past human populations, which may help contributing to the question of how current life history trajectories evolved.

2 LIFE AS GIRL IN THE NORTHEASTERN EUROPEAN MESOLITHIC: SOCIAL IMPLICATIONS FROM BIOANTHROPOLOGICAL DATA

Abstract author(s): Batanina, Olga - Eckelmann, Rebekka (University of Helsinki) - Stewart, Nicolas (University of Brighton)

Abstract format: Oral

This paper studies the social roles of girls and girlhood in Mesolithic Hunter-Gatherer-Fisher community in the European North combining bioanthropological data and archaeological evidence.

While the issues of prehistoric childhood have gained their place in the bioarchaeological and ethnographic research, the world of girls in past societies is still marginalized. One of the reasons for their "invisibility" has often been the scarcity of reliable sex estimations of immature skeletal remains. The emergence of DNA- and, more recently, enamel peptide-based methods do, however, have the potential to change this status quo fundamentally.

The anthropological material analyzed here is originating from the burial site of Yuzhniy Oleniy Ostrov (YOO), Karelia, Russia. Radiocarbon analysis dates the site to 6000-6200 ca BC, and it is considered the largest Mesolithic burial site in Northeastern Europe containing at least 177 burials. The number of individuals of both sexes and various age groups is sufficiently high to investigate social relationship within the YOO group.

Using multiple proxies, including pathological manifestations, dietary reconstructions and burial practice, we question whether immature females at YOO constitute a distinct social group within the burial community.

This subject is of additional import since previous research at YOO suggests that only specific individuals may have been selected to be buried at the site. This claim leads to the question of possible reasons for why these immature females were chosen for burial at this specific location.

3 THE MOTHER-INFANT NEXUS IN ANCIENT HUMAN POPULATIONS: DIETARY SHIFTS IN EARLY LIFE THROUGH HIGH-RESOLUTION HISTOLOGICALLY-CONTROLLED COMPOSITIONAL BIOGEOCHEMISTRY OF DENTAL ENAMEL

Abstract author(s): Nava, Alessia (Geochronology and Isotope Geochemistry Laboratory, Institute of Geological Sciences, Polish Academy of Sciences; Department of Odontostomatological and Maxillofacial Sciences, Sapienza University of Rome) - Bondioli, Luca (Department of Cultural Heritage, University of Padua; Department of Cultural Heritage, University of Bologna) - Mahoney, Patrick (School of Anthropology and Conservation, University of Kent) - Anczkiewicz, Robert (Geochronology and Isotope Geochemistry Laboratory, Institute of Geological Sciences, Polish Academy of Sciences) - Müller, Wolfgang (Institute of Geosciences, Goethe University Frankfurt; Frankfurt Isotope and Element Research Center - FIERCE, Goethe University Frankfurt)

Abstract format: Oral

Mammalian teeth preserve a record of the individual biological life history from a few weeks after conception to adolescence. Dental tissues formed before birth are capable to record the health status, diet and mobility of the mother, carrying information about the mother-infant dyad during pregnancy. These crucial moments in individual life are still underexplored in past human populations.

Maternal diet, nursing practices, and the onset of weaning can be reconstructed at the highest temporal resolution using laser-based elemental and isotopic biogeochemical analyses of dental enamel. Indeed, human growth and development strongly correlate with dietary behaviours – including that of the mother during pregnancy. A close-to-longitudinal analysis of the incorporation of trace elements in dental enamel allows for disentangling even subtle variations in the individual diet at a sub-weekly resolution, while the high-resolution topographic analysis of diagenesis indicators (U, Mn, REE), allows distinguishing the biogenic signal from the diagenetic one in fossil and archaeological specimens.

In this contribution, we present both the models of trace element incorporation in enamel derived from contemporary infants with well-known biological life histories and their application to archaeological and fossil human specimens.

4 INFANT FEEDING PRACTICES IN ROMAN ITALY: WEANING VARIATION AND ITS RELATIONSHIP TO THE LIVED EXPERIENCES OF WOMEN IN THE PAST

Abstract author(s): Oldershaw, Leigh (Department of Anthropology, The Ohio State University) - Lugli, Federico (Laboratory of Osteoarchaeology and Paleoanthropology - BONEs Lab, Department of Cultural Heritage, University of Bologna; Department of Chemical and Geological Sciences, University of Modena and Reggio Emilia) - Boczkowska, Marcelina (Geochronology and Isotope Geochemistry Laboratory Institute of Geological Sciences Polish Academy of Sciences) - Kożuch, Michał (Geochronology and Isotope Geochemistry Laboratory Institute of Geological Sciences Polish Academy of Sciences) - Sperduti, Alessandra (Museum of Civilizations, Bioarcheology Service) - Coppa, Alfredo (Department of History, Anthropology, Religion, Arts and Performing Arts, Sapienza University of Rome) - Guatelli-Steinberg, Debbie (Department of Anthropology, The Ohio State University) - Bondioli, Luca (Department of Cultural Heritage, University of Padua; Department of Cultural Heritage, University of Bologna) - Anczkiewicz, Robert (Geochronology and Isotope Geochemistry Laboratory Institute of Geological Sciences Polish Academy of Sciences) - Nava, Alessia (Geochronology and Isotope Geochemistry Laboratory Institute of Geological Sciences Polish Academy of Sciences; Department of Odontostomatological and Maxillofacial Sciences, Sapienza University of Rome)

Abstract format: Oral

Bioarchaeological studies play a critical role in elucidating infant health, breastfeeding, and weaning in past human populations. Currently, sources of information on weaning timing in the Roman world are limited to some written sources and to bioarchaeological determinations of weaning timing acquired via stable isotopic analyses. This research takes traditional isotopic weaning studies one step further by combining Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS) time-resolved analyses of elemental ratios (Ba/Ca, Sr/Ca and Pb/Ca) and traditional histological methods to reconstruct individual weaning timelines at the highest temporal resolution for 52 molars from 48 individuals from across Roman Italy dating from the 1st-5th centuries AD. These individual timelines help to elucidate the degree to which the weaning process varied in mode and time, thereby serving to establish a baseline for understanding the role maternal (or caregiver) choice and differential access to resources may have played in determining early to late feeding practices, and infant health, in Roman Italy. Results are contextualized using existing documentary and archaeological data.

5 RECONSTRUCTING WOMEN'S BIOGRAPHIES: AN EXCEPTIONAL CASE STUDY FROM VALENCINA (SEVILLE, SPAIN)

Abstract author(s): Cintas Peña, Marta - Luciañez Triviño, Miriam - Montero Artús, Raquel (Department of Prehistory and Archaeology, University of Seville) - Bileck, Andrea (Department of Analytical Chemistry, University of Vienna; Joint Metabolome Facility, University of Vienna) - Bortel, Patricia (Department of Analytical Chemistry, University of Vienna) - Kanz, Fabian (Center for Forensic Medicine, Medical University of Vienna) - Rebay-Salisbury, Katharina (Department of Prehistory & Western Asian/Northeast African Archaeology, Austrian Archaeological Institute, Austrian Academy of Sciences) - García Sanjuán, Leonardo (Department of Prehistory and Archaeology, University of Seville)

Abstract format: Oral

In recent years, human bone biogeochemistry has opened up entirely new pathways of understanding the biographies of past people. This paper examines the exceptional case of the most socially prominent individual of the Iberian Pre-Beaker Copper Age (c. 3200-2500 cal BC), who died between the ages of 17-25 and was buried alone in a megalithic tholos-type structure alongside a set of luxurious prestige goods in the site of Valencina (Seville, Spain). Evidence suggests that single burials were relatively common, yet individualized grave goods were reserved for only a few adults—no infants or juveniles were found with individualized grave goods. This person's life-history has been reconstructed through anthropological analysis, strontium isotopes and mercury data, and contextual evidence. Initially assumed to be a male, recent analysis of sexually dimorphic amelogenin peptides in tooth enamel has allowed us to determine her female chromosome sex. This sex determination, combined with the fact that at present only women, not males, seem to have enjoyed a similarly high social position in Valencina, leads us to reevaluate previously established interpretations of the political role of women at the beginning of early social complexity. By reconstructing this woman's life-history, we seek to contribute to a better understanding of female biographies during prehistory.

6 WOMEN'S LIFE HISTORIES AMONG ANCIENT VENETI: THE MIDDLE IRON AGE NECROPOLIS OF CUS-PIOVEGO (PADUA, ITALY)

Abstract author(s): Beck De Lotto, Michael Allen (Department of Cardiac, Thoracic, Vascular Sciences, and Public Health, University of Padua) - Capasso, Giusy (Department of Cultural Heritage, University of Padua) - Lugli, Federico (Department of Cultural Heritage, University of Bologna) - Bondioli, Luca - Vidale, Massimo (Department of Cultural Heritage, University of Padua)

Abstract format: Oral

The Middle Iron Age necropolis of CUS-Piovego (second half of the VI - first half of the IV century BCE) is one of the most important – and most intensively studied – pre-Roman necropolises in Padua, representing a key context for understanding the socio-political transformations in the crucial transition phase towards full urbanization. The necropolis yielded 135 cremations, 25 inhumations, 6 horse burials, and the grave of an adult male inhumed with a horse. The bioarchaeological study of the human skeletal remains was supported by proteomic analysis of dental enamel to confirm/deny the morphological sex estimates and by strontium isotope analysis for the study of mobility.

Among the inhumed individuals, the 40-years-old female from Grave V, inhumed supine, shows extra/para-masticatory wear in teeth diagnostic for fiber processing, several enthesal changes in the upper limbs, and subacromial impingement syndrome in the right shoulder girdle, all suggesting repeated and intense work activity of spinning/weaving. $^{87}\text{Sr}/^{86}\text{Sr}$ analysis suggests this individual was local.

The 17-20 years old female from Grave IX was inhumed in a prone position, without grave goods. The anomalous position of all limbs, constrained behind the back, recalls the 'hogtie' binding, in which the legs and wrists are held in tension by the same rope. However, no evidence of stress or inflicted trauma was recorded. $^{87}\text{Sr}/^{86}\text{Sr}$ analysis suggests this individual was non-local.

Looking at the relationship between women, work, and violence, this analysis shows that inequalities existed within the women of the inhumed segment of the CUS-Piovego population. While the elder individual seems to have had a work-dominated life, anyhow allowing her to reach adulthood, in the second case, the young non-local female experienced an episode of violence with a probable fatal outcome during her adolescence.

7 LIFE HISTORY OF A CROATIAN NOBLEWOMAN RECONSTRUCTED THROUGH (BIO) ARCHAEOLOGY, PALAEO RADIOLOGY AND BIOCHEMISTRY

Abstract author(s): Novak, Mario - Jankovic, Ivor (Institute for Anthropological Research) - Plese, Tajana (Croatian Conservation Institute) - Cavalli, Fabio (General Hospital Trieste)

Abstract format: Oral

The study aims to reconstruct the life history of an individual whose skeleton was recovered during the excavation of the Pauline monastery of the Blessed Virgin Mary in Moslavacka Gora, Croatia. The monastery was one of the most important ecclesiastical centers in continental Croatia during the 14th/15th century and was abandoned between 1520 and 1544 due to Ottoman attacks. The inscription and coat of arms on the tombstone of a monumental tomb located in the church apse as well as archival records indicate that the skeleton belongs to Sofia Kastelanovic née di Prata (di Pordenone), a member of Croatian high ranking nobility.

We conducted conventional bioarchaeological study, carbon and nitrogen stable isotopes analysis, CT scanning and 3D facial reconstruction. The bioarchaeological analysis showed that the skeleton belongs to a middle-aged woman with an estimated stature of about 159 cm. Numerous changes such as ATML, caries, abscess, linear enamel hypoplasia, and osteophytosis were observed during the analysis with the most notable pathology being the fracture of right distal tibia and fibula also confirmed by CT scanning. Carbon and nitrogen isotopic values are consistent with terrestrial diet based on C3 plants with no marine input, and the consumption of large quantities of animal-based proteins. 3D facial reconstruction revealed her physical appearance which allows us to compare it with facial characteristics of other members of her family.

The presented results confirm the assumption that the skeleton belongs to Sofia Kastelanovic, thus making her the first historic individual with reconstructed life history and known name from that period in Croatia identified by using a multi-analytical approach.

A. PUBERTY AND ADOLESCENCE IN MEDIEVAL IRELAND

Abstract author(s): Ham, Allison (University of South Carolina)

Abstract format: Poster

Adolescence is a critical period in the human life cycle for physical and psychological development, but long-term trends in the effects of ecological, cultural, and biological diversity on variation in patterns of adolescent growth and maturation are not well understood. Using skeletal remains excavated from ten archaeological sites dating to the medieval period in Ireland (CE 500-1550), this study analyzed sex-specific patterns of pubertal timing to better understand the relationship between environmental conditions during this critical developmental and culturally relevant age period and patterns of growth and maturation in the past. Pubertal timing was assessed on individuals between 8-25 years of age (n=83) using skeletal markers associated with stages in the adolescent growth spurt: mandibular canine mineralization, cervical vertebrae maturation, and fusion of the hand, elbow, wrist, and iliac crest. The threshold for delayed pubertal timing was based on the 95% confidence interval (pooled sex) for the within-sample expected age of attainment for pubertal stage, and the fusion of the distal phalanges, iliac crest, and pubertal stage-at-death was used to assess whether female individuals had achieved menarche. The results of the study revealed similar mean ages-at-death for males and females within the peak height velocity stage (~14 years), but females had older mean ages-at-death compared to males for both the deceleration and maturation stages. Within the sample, three males and two females were identified as having delayed pubertal growth, and menarche was achieved by 17 years of age for female individuals. Overall, these findings suggest that females in medieval Ireland were experiencing an elongated adolescent growth period, which expands our understanding of the effects of cultural and environmental pressures on sex-specific patterns of adolescent growth and maturation and provides insight into human reproductive life histories in the past.

B. SEX DIFFERENCES IN PERIODONTAL DISEASE IN LATE MEDIEVAL AND EARLY MODERN BERLIN

Abstract author(s): Brennan, Emily (University of South Carolina)

Abstract format: Poster

Periodontal disease (PD) is the result of chronic bacterial infection and represents one of the most common chronic contemporary conditions. The majority of studies from both living and archaeological populations have seen higher frequencies of PD in males compared to females. This study examines sex differences in periodontal disease in the late medieval (c. 1200-1500) and early modern (c. 1500-1717) periods from adults (individuals with complete epiphyseal fusion) excavated at Petriplatz, the churchyard of St. Peter's Church dating to c. 1200, in the medieval city of Cölln/Berlin, now present-day Berlin. PD was scored on the left mandible according to guidelines developed by Kerr. Hazards modeling and Fishers Exact tests were used to examine trends in periodontal disease across estimate

sex and time period. During the late medieval period, estimated males have higher frequencies of PD than estimated females, while in the early modern period, estimated females display a slightly elevated frequency compared to estimated males, though these results are not significant for either period. For adults with PD in both time periods, estimated females have an increased risk of mortality compared to estimated males, and this increase is significant in the early modern period. Therefore, while frequencies by sex differed little, females with PD face an increase in mortality compared to males with PD. This sex differential may be due to greater underlying frailty in females as PD can be associated with other comorbidities. Cultural attitudes surrounding health/dental care and access to treatments for women at the time may also have exacerbated mortality risk. The Protestant Reformation (c.1517) enforced a new gender hierarchy and placed a greater emphasis on marriage for women. Even as knowledge of oral hygiene increased in the early modern period, this gender hierarchy may have constrained women's ability to access care in the event of infection.

C. PALAEOHISTOLOGICAL ANALYSIS OF BONE LESIONS SUGGESTIVE FOR TREPONEMATOSIS, IDENTIFIED IN HUMAN SKELETON OF 15TH-19TH CENTURIES FROM IASI (ROMANIA)

Abstract author(s): Ciorpac-Petraru, Ozana-Maria - Popovici, Mariana ("Alexandru Ioan Cuza" University of Iasi, Faculty of Biology; Romanian Academy – Iasi Branch, "Olga Necrasov" Center of Anthropological Research) - Neagu, Anca-Narcisa ("Alexandru Ioan Cuza" University of Iasi, Faculty of Biology) - Groza, Vasilica-Monica - Bejenaru, Luminita ("Alexandru Ioan Cuza" University of Iasi, Faculty of Biology; Romanian Academy – Iasi Branch, "Olga Necrasov" Center of Anthropological Research)

Abstract format: Poster

In 1995, during the archaeological excavations at the Romano Catholic Cathedral from Iasi city (Romania), several human skeletons of 15th-19th centuries were discovered. Three of the 89 inhumation skeletons showed several pathological modifications on bone surface, suggestive for treponematosi. Although treponematosi lesions in human skeletons has been studied, particularly by macroscopical and imagistic approaches (i.e., X-rays, CT scans), the microscopical analysis of the affected archaeological bone tissue is an issue that has not been addressed at the same scale. This study focuses on only one skeleton with such lesions (M40, adult female), to provide information on cellular activity related to this disease from the past. Bone tissue samples were collected from the left femur and right humerus, being then subjected to the methodology for histological examination of dry bone and histotaphonomical evaluation. The taphonomic evaluation showed that the bones were very well preserved in archaeological context. Both proliferative and osteolytic processes were identified as a result of an inflammatory process. A more compact proliferative bone structure (polster) was identified in the femur sample, in which woven and lamellar bone were observed. The proliferative tissue from the humerus had a villous like architecture with numerous crypts, with the woven bone being more predominant than the lamellar one. The presence of woven bone may indicate that the inflammation was active at the time of death, and the different amounts of it between the samples may suggest that the periostitis had a different timing, first in the femur bone and then in the humerus. Sinuous lacunae were also observed in the compact bone tissue, indicating an osteolytic activity. This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-III-P4-PCE-2021-1180, within PNCDI III.

690 IN SEARCH OF SUSTAINABLE PASTORALISM: STORIES OF HERITAGE, RESILIENCE, AND COLLABORATION

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Lash, Ryan (University College Dublin) - Nieto-Espinet, Ariadna (University of Lleida) - Del Fattore, Francesca Romana (Soprintendenza Archeologia, Belle Arti e Paesaggio per le Province di L'Aquila e Teramo)

Session format: Regular session

Responding to the climate crisis will require alternatives to intensive, high emission, and environmentally destructive modes of food production. Traditional, small-scale, and extensive forms of pastoralism are increasingly recognized as possible sources of biodiversity, carbon capture, and environmental stewardship. This session considers how archaeology and ethnography can advance the search for sustainable alternatives among the vast and variable heritage of pastoralism globally.

Models of sustainability often reduce the concept to a challenge of environmental adaptation. Yet, sustainability is always also a challenge of social reproduction. Practices that are ecologically responsible must also be maintained as socially desirable and economically viable. Thus, we encourage contributions that explore the ecological, economic, and experiential dynamics of pastoralism in the past and present. In short, how can the experiences, values, and traditional knowledge of pastoralists foster the future sustainability of pastoral livelihoods?

Contributors might address one or more key themes:

- Heritage:

How do traditions of pastoralism rely upon the transmission of specific embodied skills, sensory dispositions, and perceptions of value? How do music, storytelling, and festivities play a role in valorising pastoral heritage? Can pastoralists offer alternative models for conceiving human relationships and responsibilities to animals and ecosystems?

- Resilience:

How have humans adapted pastoral livelihoods to environmental, climatic, economic, and political dynamics in the past? Does resilience depend upon the long-term reproduction of existing social and environmental conditions or short-term flexibility in the midst of inevitable change? How have different strategies of husbandry (selective breeding, transhumance, biodiversity management, etc.) enabled resilience across time?

- Collaboration:

How can collaboration with contemporary practitioners inform understandings of the past and inspirations for the future of pastoralism? Can archaeological research contribute to the improvement of current land management and planning policies?

We especially invite contributions from researchers involved in ethnography, ethnoarchaeology, and public engagement.

ABSTRACTS

1 COLLABORATION, HERITAGE AND RESILIENCE: A METHODOLOGICAL APPROACH TO SUSTAINABLE LANDSCAPE ENHANCEMENT THROUGH THE STUDY OF TRANSHUMANCE

Abstract author(s): Migliorati, Luisa (Sapienza Rome University) - Muntoni, Italo Maria (Soprintendenza ABAP per le provincie di Barletta-Andria-Trani e Foggia) - Del Fattore, Francesca Romana (Soprintendenza ABAP per le provincie di L'Aquila e Teramo) - Camerata, Flavio (U-SPACE srl) - Canino, Dario (Parco Archeologico dell'Appia antica) - Vecchione, Alessandro - SITAR-Roma)

Abstract format: Oral

The network of European transhumance routes has been a vector for the dissemination of ideas, cults, traditions, trades, knowledge of natural phenomena, diseases, remedies, etc., and has also been a factor in the integration of different human groups. The sectorial approach of transhumance studies has shown however its limits. A change is needed to deal with such a complex phenomenon that developed in different geographical regions and with different types of herds.

A multidisciplinary approach is therefore necessary to obtain fruitful results from a cultural and environmental point of view, that can be applied to different territories crossed by pastoral routes. Very often the development of mountainous/marginal geographic areas requires enhanced support through forms of close cooperation between public bodies and local communities. The aim is to foster valid forms of spatial planning compatible with protection.

Our proposal is the result of a scientific team work/confrontation that led to the definition of an ERC proposal submitted in 2020. This multidisciplinary 'cultural hub' aimed to highlight the cultural and environmental potential of the "transhumance system" in Central and Southern Italy through a strong contamination between hard sciences and humanities. We propose an innovative, sharable and replicable methodology potentially useful for defining international protocols for the study and valorisation of pastoral landscapes.

2 STORIES OF COLLABORATION, HERITAGE AND RESILIENCE. PASTORAL TESTIMONIES AND MEMORY CARRIERS ALONG THE VIA SALARA (ABRUZZO, ITALY)

Abstract author(s): Del Fattore, Francesca Romana (Soprintendenza Archeologia, Belle Arti e Paesaggio per le Province di L'Aquila e Teramo)

Abstract format: Oral

This presentation is part of PECUS (Pescasseroli Candela Upland Survey - www.pecus-project.eu), an ongoing interdisciplinary research focusing on the sheep-tracks network in Central-Southern Italy. We use data acquired between 2010 and 2016, during Fluturnum, a field-project conducted in collaboration between the University of Bologna, Matrix 96 cooperative (www.matrix96.it) and the Municipality of Scanno (L'Aquila province, Abruzzi).

The route - probably a protohistoric path - connected the municipium of Sulmo with the Samnium area, through the Sagittarius Valley and the Godi pass (L'Aquila province, Abruzzi). This seasonal "via" later became part of the network of pastoral routes (tratturi) of historical times. Humans, ideas, animals, seeds and consumer goods moved along it, including salt (as the toponym suggests) used to preserve food and as a vital supplement in ovicaprine diet. The area has been permanently inhabited at least since the late and final phases of the Bronze Age, as surveys and stratigraphic excavations demonstrate.

The long-distance transhumance towards the Apulian Tavoliere stopped in the sixties of the last century. Nevertheless, along the Via Salara, some breeders are still conducting residual pastoral activities, often reusing caves and shelters already known in ancient times. Some of them have actively collaborated with our research team, providing knowledge of places, memories and know-how. They shared with us working areas, sheepfolds and stories.

Through their testimony, they share their perception of the surrounding landscape and suggest possible strategies to respond to climate changes and to counter depopulation and abandonment in the inland Apennines areas.

3 USING TOPONOMY AND PARTICIPATORY MAPPING TO INTERPRET HERITAGE AGROSILVOPASTORAL LANDSCAPES FOR FUTURE SUSTAINABILITY

Abstract author(s): Hearn, Kyle (Public University of Navarre) - Atik, Meryem (University of Akdeniz)

Abstract format: Oral

In the county of Miranda do Douro, Portugal and the district of Serik, Turkey for centuries pastoralism, agriculture, and forest management have been closely interlinked. This agrosilvopastoral land use has created human modified cultural landscapes that are reflected in their territorial organization, local landscapes, biodiversity, and, until the mid-20th century, their sustainability as well. In both of these Mediterranean region countries, emigration and governmental natural park preservation strategies are altering a once diverse landscape that is slowly becoming abandoned and consequently more biologically homogenous as agropastoralism declines. Toponymy is a valuable lens in landscape analysis to elucidate and characterize past land uses and management as the local memory of the historic landscape fades with depopulation and abandonment. Collective memory of toponyms represents part of the Local Spatial Knowledge of the village populations. Utilizing Public Participation GIS (PPGIS) in this study, we demonstrate the value of PPGIS as a tool to access Local Spatial Knowledge to chart never before mapped toponyms of these endangered rural heritage landscapes. Using three case studies in Turkey and three in Portugal, results were placed in a GIS. Participating residents in both countries revealed field names at precise locations at a municipal and local scale that demonstrated a changing landscape once wholly dedicated to agrosilvopastoralism. In our paper, public collaboration and toponymic analysis through PPGIS demonstrated not only the declining memory of local toponymy and its connection to historic landscape use, but most importantly, they provide a visual map and database for land managers today to understand past agrosilvopastoral landscapes to apply to sustainable strategies for the future.

4 PLAYING WITH YOUR FOOD: ENRICHING ARCHAEOLOGICAL PERSPECTIVE WITH MODERN ANIMAL HUSBANDRY

Abstract author(s): Rose, Samantha (University of Aberdeen)

Abstract format: Oral

As some may say: there is no substitute for experience. This is certainly the case with husbandry skills which require hands-on knowledge transfer, in which „tricks of the trade“ help calm unruly livestock so farmers can work smarter and not harder. These tricks can also keep farmers and their animals safer and maximize yields. But how does this apply to archaeology? When examining the material culture of certain animal practices, it is this generational knowledge of animals, their behavior, their physiology, and the establishment of a working human-animal relationship that can develop new approaches to archaeological study. For this talk, sheep shearing is used as an example of how modern sheep farming retains an unbroken line of human-animal interactions passed down through prehistory. The tools, modern fleece management and processing, and even the very patterns in which sheep are sheared may have changed with time and geography, but at its core the physicality and subsequent bond between sheep and shearer remain.

5 ISLAND PASTURES: THE HERITAGE OF MARITIME PASTORALISM IN CONNEMARA, IRELAND

Abstract author(s): Lash, Ryan (University College Dublin) - Burke, Tommy (Inishbofin Island Archaeology and Heritage Walks)

Abstract format: Oral

Small-scale farming represents an important source of identity and income for inhabitants of coastal and island communities along Ireland's Atlantic seaboard. Although livestock animals feature as icons of Irish heritage in promotional tourist material, farmers working within areas of special conservation and heavy tourist traffic face significant challenges to their livelihoods.

This paper uses archaeological, ethnohistoric, and ethnographic evidence to provide a deep historical perspective on patterns of change, continuity, and the potential sustainability of small-scale pastoralism in western coastal Ireland. It will focus particularly on a distinctive form of maritime pastoralism involving the movement of livestock by boat or by swimming between coastal and island settings. Pedestrian and drone-aided survey on the border of counties Galway and Mayo has documented the remains of stone huts, boundary walls, and enclosures on numerous small, uninhabited

islands that are still used for grazing sheep or cattle. Originating in the early medieval period – if not earlier – practices of maritime pastoralism have shifted dramatically in the last century with the emergence of motor-powered boats and the transition from dairying to an exclusive focus on meat production for export.

Oral history and participant observation with contemporary farmers indicate how maritime pastoralism generates distinctive embodied skills, maintains traditional knowledge, and could play a role in the preservation of local archaeological and environmental heritage. Stories from island pastures offer both cautionary tales and inspirations for future work on the intersection of archaeology, conservation, and sustainable agriculture.

6 PASTORALIST HERITAGE, WATER SECURITY, COMMUNITY ENGAGEMENT AND SUSTAINABLE DEVELOPMENT IN NORTHERN KENYA AND SOUTHERN ETHIOPIA

Abstract author(s): Lane, Paul (University of Cambridge) - M'Mbogori, Freda (National Museums of Kenya)

Abstract format: Oral

In this paper we present the initial results of an ongoing collaborative research project supported by the British Academy and other funding bodies between archaeologists and pastoralist community organisations on the long-term history of indigenous water management and well digging in northern Kenya and southern Ethiopia, and their related settlement history. Conceived as a community archaeology project from the outset on the biocultural heritage of extant and abandoned wells, the project has brought together various local stakeholders with diverse knowledge, skills, and experience to exchange understandings of pastoralist self-organisation and sustainable development in these arid but resilient landscapes. Currently, demand for water drives government and investor development in these arid regions and is focused on building infrastructure to extract new energy sources (oil, wind, hydroelectric) to the exclusion of pastoralist rangelands and water points. While creating new economic and employment opportunities and intended to enhance water security in the region, these projects have also posed both physical and ontological threats to pastoralist heritage in both southern Ethiopia and northern Kenya, raising key questions as to how best to integrate the protection and celebration of cultural practices and traditions and heritage sites alongside providing socio-ecological development initiatives that meet community-determined values, procedures, and priorities.

7 THE POLLINO ARCHAEOLOGICAL LANDSCAPE PROJECT, ARCHAEOLOGY AND ETHNOGRAPHY OF PAST AND PRESENT PASTORAL PRACTICES IN THE POLLINO MOUNTAINS (SOUTHERN ITALY)

Abstract author(s): Attema, Peter (Groningen Institute of Archaeology) - de Neef, Wieke (University of Ghent / University of Bamberg)

Abstract format: Oral

One of the main objectives of the Pollino Archaeological Landscape Project (PALP) is the study of pastoral use of the Pollino mountain range (southern Italy) from its origins to the present day. Archaeological and environmental survey as well as the recording of abandoned pastoral structures were key activities in the first two field seasons (2020 and 2021). To this we added an interview in 2022 with a pastoralist who still had remembrances of daily life in the upland summer camp of Mandra Vecchia located at ca. 1910 m altitude near the major mountain pass known as the Grande Porta del Pollino. The interview was highly informative on the spatial, logistic, productive and social organisation of the camp of which we had documented the material remains. We also held an interview with a pastoralist still actively involved in cattle herding and discussed today's practices in comparison with past practices. In our paper we will discuss two topics. Firstly, our academic interest in the reconstruction of mountain economies over the *longue durée*. Secondly, the contribution we can make to share a valuable cultural heritage known with a wider audience in the context of the Pollino Mountain range as one of Italy's UNESCO Global Geoparks. To this end PALP collaborates closely with the governing body of the Parco Nazionale Del Pollino that generously supports the team logistically and financially.

8 SUSTAINABLE LIVESTOCK FARMING AND ARCHAEOLOGY: RESEARCH, INTERDISCIPLINARITY, COLLABORATION, AND TRANSFER AT THE SERVICE OF THE TERRITORY (CATALONIA, SPAIN)

Abstract author(s): Nieto-Espinet, Ariadna (Grup d'Investigació Prehistòrica - GIP, Departament d'Història, Universitat de Lleida, CENTAURO - PID2020-113369RJ-100 & MOBICEX - PID2019-110022GB-I00) - Trepal Deltell, Eduard (Associació d'Iniciatives Rurals de Catalunya - ARCA) - Borell Amorós, Marc (Institut per al Desenvolupament i la Promoció de l'Alt Pirineu i Aran - IDAPA) - Batalla-Carrera, Laia - Díaz De Quijano Barbero, María (Escola de Pastors i Pastores de Catalunya, Associació Rurbans) - Torras, Bernat - Aldabó, Cesc (Associació Catalana de Tracció Animal Moderna - ACTA) - Alonso, Natàlia (Grup d'Investigació Prehistòrica - GIP, Departament d'Història, Universitat de Lleida, CENTAURO - PID2020-113369RJ-100 & MOBICEX - PID2019-110022GB-I00) - Torra Burgués, Ada - Villalba Mata, Daniel (Departament de Ciència Animal, Universitat de Lleida)

Abstract format: Oral

In the European Union, Community zootechnical regulations and the current Common Agricultural Policy (CAP) have biodiversity preservation as one of their major goals, to advance a growing commitment to sustainability and care for the environment. In line with this European agricultural model of sustainability, local breeds are a clear example of a multifunctional element, providing benefits in three dimensions: economic, social, and environmental. However, the genetic diversity and continuity of many of these breeds are currently threatened by the abandonment of their exploitation and loss of their traditional uses. This is a challenge for public administrations and livestock farmers.

Archaeozoological research can provide knowledge on the evolution of livestock farming, the resilience of pastoral practices in different economic systems, and the adaptations of livestock species to local landscapes over time. Some previous results from Catalonia (Spain) warn about the disconnection between the extensive livestock models that have been traditionally implemented in the area since the Neolithic and the current industrial ones. Archaeology can help to raise social awareness of the ecological and cultural value of local breeds and traditional livestock systems. To this end, the transfer of knowledge is essential, to establish a dialogue between science and society, connecting the past with the present. But are we adapting the transfer and dissemination to the reality of the different social groups linked to the rural and livestock world? In this paper, we will reflect on these issues from the experience of more leisurely and decentralised archaeological research. We will present various experiences and initiatives of scientific transfer and dissemination that we have carried out thanks to the collaboration between livestock farmers, herders, researchers in bioarchaeology, veterinary and agronomy at the University of Lleida, and the entities working for the conservation of local breeds and extensive livestock farming in Catalonia.

691 FEELING AND LEARNING ABOUT THE PAST: NEW METHODOLOGIES FOR STUDYING ARCHAEOLOGICAL SITES

Session theme: 3. Heritage Narratives and Representations

Session organisers: Angliker, Erica (British School at Athens) - Tardin Cardoso, Isabella (Unicamp - University of Campinas)

Session format: Regular session

Excavations are the ideal place to learn about the various tasks used in archaeological fieldwork, such as registering artefacts, charting the various levels of the dug area, conserving the site, studying the ceramic finds, etc. Yet aside from familiarising students with the technical skills required in the field, excavations also put them in contact with the past, encouraging them to reflect not only on this past, but also on the environment. This panel aims to explore the many forms of learning at archaeological sites while considering new approaches and methodologies. Amongst the topics to be considered are the connections between sensorial studies and archaeological fieldwork, more specifically, how touch, light, and smell may enhance learning at archaeological sites. Of equal interest are new methodological approaches that integrate experimental activities focused on the sensorial aspects of the site, which too can teach us something about the past. We welcome papers from various regions and different periods of history.

1 LIMINAL LANDSCAPES: MATERIAL CHRONOLOGY AND THE TIMELESSNESS OF SENSORY PHENOMENOLOGY

Abstract author(s): Gipe-Lazarou, Andrew (Virginia Tech, School of Architecture) - Lafasciano, Luigi (The Diakron Institute)

Abstract format: Oral

According to renowned architect and phenomenologist, Juhani Pallasmaa, the physical landscape and built environment are understood as a total sensory experience, in which ‘qualities of space, matter and scale are measured equally by the eye, ear, nose, skin, tongue, skeleton and muscle’. These spatial qualities, which are subject to and evidence of the passage of time, provide a chronological reference for the timelessness of sensory learning, so that a partial wall, whether recently constructed in the Archaic Period or recently exhumed in the present day (mostly) conveys the same sensory experience of roughness, durability, and order. And though the architecture or artefacts of a particular time period may not be wholly extant or accessible (or else may co-exist with alternative chronologies), we maintain that their careful organization can provide the basis for a substantive (even if partial) experience of antiquity.

What is the relevance of experiential learning to contemporary education? What are the pedagogical possibilities of multisensory experience? How can modern sensory experiences inform our understanding of Antiquity?

This paper presents the pedagogy of The Diakron Institute’s ongoing Cultural Exploration of the Cyclades, an immersive educational program which explores the history and culture of the Greek islands. Students and faculty from around the world participate in the excavation of an Archaic sanctuary on the island of Despotiko, and are guided through the landscape of ritual activities carried out by Ancient Greek adolescents in preparation for ephebeia. These activities included learning how to fish along the coast and on the Sea, to sing and dance in public space, to recite poetry and practice divination in meditative space. The program’s organization references a wide range of literary and archaeological sources, emphasizing elements of cognitive and experimental archaeology, used as both a didactic tool and a platform for original academic research.

2 FROM ARCHAEOLOGICAL SITE TO CLASSROOM: EYE-TRACKING AS A TOOL TO LEARN HOW TO ANALYSE ARCHAEOLOGICAL REMAINS AND UNDERSTAND EXPERT THINKING

Abstract author(s): Michalik, Tomasz (Polish Centre of Mediterranean Archaeology, University of Warsaw)

Abstract format: Oral

Visual analysis of cultural layers and artefacts is a basic procedure in archaeological research. However, teaching the visual analysis of archaeological remains can be a challenge, mostly because seeing is not an entirely conscious process. Eye-tracking technology can be a solution to this challenge, allowing for insight to the strategies used by experts to visually analyse archaeological data.

The presentation will discuss the use of the eye-tracking technology in archaeological teaching. As a part of the project archaeological experts were invited to create educational materials presenting their methods of visual analysis of artifacts and cultural layers. Remote eye-tracking Tobii Pro Glasses 3 have been used for the recordings. The videos were shot during the excavation campaign in Archaeological Site in Old Dongola (Sudan), in the offices of the University of Warsaw and at the National Museum in Warsaw. Subsequently the educational materials were used during archaeology classes conducted at the University of Warsaw and evaluated by students.

The results show that the recordings of experts’ eye movements during the analysis of artefacts (flint tools, stone tools, pottery fragments and paintings) provide numerous educational benefits for archaeology students (i.e. acquiring the first-person perspective of the experts). The students see the potential of this method in learning how to analyse various archaeological data. Moreover in students opinion the videos can make a significant contribution to remote education (i.e. in situation when personal contact with expert and artefacts is limited). Thus eye-tracking materials can be an important element in the democratization of learning – making experts’ way of thinking more accessible for students participated in fieldwork, in classroom as well as in remote education.

3 THE USE OF SENSORIAL STUDIES TO REPOPULATE ANCIENT EGYPTIAN HOUSES: THE CASE OF AMARNA

Abstract author(s): Rocha da Silva, Thais (University of Oxford; University of São Paulo)

Abstract format: Oral

The study of ancient Egypt settlements and houses traditionally focused on architectural features and artefact assemblage to determine how people lived in the past. Isometric models and photogrammetry have been used to, sometimes, fill the gaps of missing data, allowing scholars to extrapolate the available information and readjust their

questions. In parallel, these models have allowed non-academic audiences to glimpse the lifeways of ancient populations. As much as the investigation of settlements have developed in the last decade, ancient Egypt cities and houses are still depopulated. The nature of Egyptological publications for settlements and houses, either focused on architecture, or on artefact groups, offers but a fragmentary perspective about how ancient Egyptian may have lived. In this regard, sensorial studies have demonstrated to be useful to repopulate these locations. In this presentation I discuss the benefits and limitations of sensorial studies to the investigation of ancient Egyptian domestic space, taking the ancient city of Amarna as a case study. By highlighting the sensorial experience of dwelling, we need to include modern ethnographic information and bring local communities upfront.

4 **DESPOTIKO: A SITE FOR LEARNING ARCHAEOLOGY THROUGH SENSORIAL EXPERIENCES**

Abstract author(s): Angliker, Erica (British School at Athens)

Abstract format: Oral

Excavations are the ideal place to learn about the various tasks involved in archaeological fieldwork, such as registering artefacts, charting the various levels of the dug area, conserving the site, and cataloguing the ceramic finds. Since 2022, students in classics, history, literature, and law have been coming to the site of the sanctuary of Apollo on the island of Despotiko in the Cyclades to familiarise themselves with the technical skills that archaeologists use. This contact with the past encourages them to reflect not only on this piece of the past but also on the environment in which the people who worshipped at the sanctuary lived.

This paper describes the new forms of learning taking place at archaeological sites such as Despotiko, where new approaches and methodologies are helping to re-evaluate the past. Thus, the students register their sensorial experiences during the process of excavating through such activities as drawing, photographing, or taking video of the site or recording their impressions in writing. These data are then registered and compared to reveal ways in which touch, light, and smell can enhance learning at archaeological sites. Likewise, the new methodological approaches, by integrating experimental activities such as carving marble with ancient tools and producing pottery, help to reveal the sights, sounds, smells, tastes, and textures of the site so as to bring the past alive.

5 **SENSORIAL APPROACHES IN THE ARCHAEOLOGICAL FIELDWORK**

Abstract author(s): Pyrgaki, Marie (Universite Paris I, Pantheon-Sorbonne; Hellenic Open University)

Abstract format: Oral

In this paper we discuss the influence of the “sensory turn” in the social sciences that was first manifested in archaeology in the late 1990s. We examine how the field of sensoriality of an archaeological excavation, is structured by. This paper aims to correlate current trends on archaeological theory about non-rational decision-making factors in pre-historic communities, such as senses, with current mapping and geo-analytical techniques. We explore why sensorial approaches in archaeology have been criticized.

We explain how the significant advances in archaeological computing, digital methods, and sensory approaches have help archaeologists to rethink strategies and methods for creating narratives of the past.

Progress in data visualization and implementation, as well as other digital sensory methods, means that it is now easier to explore and experience ancient space from a perspective, from the individual body or single building to the wider landscape.

We think that sensory archaeology is one more element in the toolkit that enriches our understanding of the past.

692 **CRMARCHAEO WORKSHOP: A STEPPING STONE TO FAIR PRACTICE**

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Stead, Stephen (Open University; Paveprime Ltd) - Jansen, Jane (Arkeologerna; Intrasis)

Session format: Workshop

In this workshop we will explore how to use CRMarchaeo, part of the CIDOC Conceptual Reference Model, to link a wide range of existing archaeological documentation.

When working with data deposited in archives in different eras and by different organisations using ever-evolving recording methodologies, a recurrent problem is being able to systematically access elements of the record without immersing oneself in the recording milieu of the original deposits. This high intellectual cost must be paid by each scholar wishing to work on the records of a particular archaeological investigation and so effectively creates a barrier to extensive reuse of archived data. The FAIR data principles require “that all research objects should be Findable, Accessible, Interoperable and Reusable (FAIR) both for machines and for people” (Wilkinson et al. 2016). One approach to making data FAIRly accessible while reducing the effort to a single “intellectual act” is to map to a “lingua franca”, such as CRMarchaeo.

The CRMarchaeo extension has been created to promote a shared understanding of how to formalise the knowledge extracted from the observations made by archaeologists. It provides a set of concepts and properties that allow clear explanation (and separation) of the observations and interpretations made, both in the field and in post-excavation.

Attendees will work through a series of case studies that reflect different excavation documentation practices: from 1950s style day books through to context recording sheets. Followed by database/CAD combos and on to modern integrated object oriented database/GIS systems, like Intrasis.

The aim is to explore archetypical solutions and provide attendees with hands-on experience of mapping actual documentation practice to CRMarchaeo. This can then be applied to their own or archive documentation, both current and historical, in their own institutions or archives and lead to integrated reusable composites being available for both internal and external use.

693 ZOOARCHAEOLOGY AND MOBILITY IN THE PAST: HUMAN-ANIMAL INTERACTION IN ARCHAEOLOGY FROM PALAEOLOGIC TO MEDIEVAL TIMES [PAM]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Pazos García, Rocío (Universidad de Salamanca) - Cerezo Fernández, Rosana (Universidad de Salamanca; Université Toulouse) - Portero Hernández, Rodrigo (Universidad de Salamanca; Instituto de Investigaciones Prehistóricas de Cantabria) - Detry, Cleia (Centro de Arqueologia da Universidade de Lisboa - UNIARQ) - Álvarez Fernández, Esteban (Universidad de Salamanca)

Session format: Regular session

Mobility is a quality of individuals and social groups that have the ability to move around the territory for economic, social and/or cultural reasons. In this sense, mobility is a dynamic reality that must be considered in archaeological research on all historical periods. In recent decades, zooarchaeology has advanced in the knowledge of the forms of mobility of human groups from Prehistory to the present day in combination with various analytical techniques (DNA, dental microwear, osteometry, isotopic analysis, ZooMs). Aspects such as the seasonality of human occupations in the Palaeolithic in relation to hunting, migratory movements as a subsistence strategy, the functionality of settlements, the introduction of domestic animals, the improvement of certain aspects of livestock or the presence of “exotic” species in various archaeological contexts are some of the markers that allow us to trace the networks of mobility in past societies. These markers are part of the daily activity of past societies and are linked to their survival and social behaviour. Therefore, zooarchaeology has become a very useful tool to establish mobility in the various (pre) historical societies, be it short, medium, or long distance.

This session aims to create an open forum to analyse human decisions to move through different territories based on the relationship between humans and animals documented in the archaeological record in any spatial framework from Palaeolithic to Middle Ages. Proposals related to, among others, the following are welcome:

- Mobility as a subsistence strategy
- The seasonality of occupations based on dental meso- and micro-wear
- Social and commercial relationships in ancient societies
- The introduction of domestication
- DNA analysis and animal migrations
- Mobility through isotopic analysis
- Osteometry and species variability
- Ancient communication networks
- The introduction of livestock improvements
- Trade in animals and secondary products
- The presence of exotic animals in archaeological contexts
- Animal resources management

ABSTRACTS

1 THE OSSEOUS INDUSTRY IN THE SOLUTREAN-BADEGOULIAN TRANSITION OF ABRI FRITSCH (INDRE, FRANCE)

Abstract author(s): Borao, María - Pétilion, Jean-Marc (CNRS, Laboratoire TRACES – UMR 5608)

Abstract format: Oral

Abri Fritsch is located in the Indre area, in the centre of France. The site was discovered in 1957 by A. Fritsch, who directed the excavation first, followed by J. Allain and F. Trotignon over 18 years. The stratigraphy reached three metres and it is composed of rich Solutrean, Early and Late Badegoulian layers. Nowadays, the site is being restudied by

different archaeological disciplines to obtain more accurate data from the archaeological remains and reconstruct the way of life at Abri Fritsch over time.

In this work, we focus on the Solutrean and Early Badegoulian osseous industry. The aim is to develop a systematic study from a technological point of view to identify and characterise operational schemes on bone and antler. Through the “Refitting by default” method we analysed waste products, blanks, roughouts and objects. It allowed us to observe how raw material was obtained and transformed into a toolkit. Then, we extracted enough economic information to compare both cultural periods from a technical and typological perspective, inferring not only from the employed techniques but from the variability of the manufactured tools and their use in daily life at the Abri Fritsch.

2 FOOD IN THE PITS: CONTENT ANALYSIS OF MAGDALENIAN NEGATIVE STRUCTURES IN THE TITO BUSTILLO CAVE-DWELLING AREA (RIBADESELLA, ASTURIAS, SPAIN)

Abstract author(s): Alvarez-Fernández, Esteban (University of Salamanca) - Cueto, Marián (Universitat Autònoma de Barcelona) - Fernandes, Ricardo (Max Planck Institute for Geoanthropology) - García-Escarzaga, Asier (Universitat Autònoma de Barcelona) - Tapia, Jesús (Sociedad de Ciencias Aranzadi) - Aronés-Abad, Marco - Cerezo-Fernández, Rosana - Marchán, Alberto - Martín-Jarque, Sergio (Universidad de Salamanca) - Uzquiano, Paloma (UNED, Talavera de la Reina)

Abstract format: Oral

The valley of the river Sella concentrates many caves and rock shelters with prehistoric occupations, among them Tito Bustillo Cave. It has one of the most important Magdalenian occupations in Western Europe. In the 2022 fieldwork carried out in the Dwelling Area, three structures were excavated to a semi-sterile level in a space of less than one square metre. Abundant biotic and abiotic remains were documented in them. Among the former, the great abundance of marine molluscs stands out (particularly the marine gastropod *Littorina littorea*, but also *Patella vulgata*), as well as a considerable number of remains of ungulates, particularly *Cervus elaphus*. The content of the pits is completed by anthracological remains and bone and lithic industry. In this communication we analyze these remains in detail, discuss their chronology, and assess the functionality of these unusual structures in Upper Palaeolithic cave sites. Finally, we value the management of the territory of the human groups that inhabited Tito Bustillo Cave during the Magdalenian.

3 REINDEER ANTLERS AS HUMAN MOBILITY MARKERS IN NORTHERN IBERIA DURING THE MAGDALENIAN (CA. 21-13 CAL KA BP)

Abstract author(s): Lefebvre, Alexandre (Grupo I+D+i EVOADAPTA, Universidad de Cantabria) - Pétilion, Jean-Marc (CNRS, UMR 5608 TRACES) - Marín-Arroyo, Ana (Grupo I+D+i EVOADAPTA, Universidad de Cantabria) - Cueto, Marián (Universitat Autònoma de Barcelona) - Álvarez-Fernández, Esteban (Departamento de Prehistoria, Historia Antigua y Arqueología, Universidad de Salamanca) - Arias Cabal, Pablo (Instituto Internacional de Investigaciones Prehistoricas de Cantabria, Universidad de Cantabria) - Ontañón, Roberto (Museo de Prehistoria y Arqueología de Cantabria; Instituto Internacional de Investigaciones Prehistoricas de Cantabria, Universidad de Cantabria) - Berganza, Eduardo (Sociedad de Ciencias Aranzadi)

Abstract format: Oral

Interactions between prehistoric foragers and reindeer at the end of the Pleistocene are still poorly documented in northern Iberia, particularly the reasons and means by which their antlers were collected, processed and circulated. This is particularly due to difficulties in determining the extent of the ecological niche of the species in the region, and more especially to the lack of extensive studies focused on their antler. Here we have systematically reviewed the main osseous industries, dated to between 21 and 13 cal ka BP, focusing on the use and circulation of reindeer antlers as a raw material for the production of weapons and tools by Magdalenian foragers. Thirty-six reindeer antler artefacts were identified from 11 Iberian sites that are located at either end of the Pyrenees: the Cantabrian region to the west, and to a lesser extent, Catalonia to the east. Despite biases in the identification of production objectives (end-products), a detailed techno-typological, chronological and geographical analysis of these assemblages reveals both the existence of a consistent reindeer antler industry in northern Iberia and long-distance connections between the Cantabrian region and the Pyrenees. Finally, the integration of contemporary archaeozoological data makes it possible to explore the extension of the reindeer’s ecological niche, as well as strategies for the acquisition and circulation of reindeer antlers in northern Iberia.

This study was financed by an international collaboration between the Spanish Ministry of Science and Innovation (MCIN/ AEI/10.13039/501100011033) and the European Union (NextGenerationEU/PRTR) as part of the HumAntler project (PCI2021-122053-2 B).

4 **ANTLER MANAGEMENT IN THE SELLA VALLEY: THE OSSEOUS INDUSTRY FROM THE SITE OF COVA ROSA (RIBADESELLA, NORTHERN SPAIN)**

Abstract author(s): Fernández, Rosana (University of Salamanca; Université Toulouse) - Pétilion, Jean-Marc (Université Toulouse) - Cueto, Marian (Universitat Autònoma de Barcelona) - Panero, Lucia (University of Salamanca) - Portero, Rodrigo (University of Salamanca; Instituto de Investigaciones Prehistóricas de Cantabria) - Tapia, Jesus (Sociedad de Ciencias Aranzadi, San Sebastián) - Jordá Pardo, Jesus (Universidad Nacional de Educación a Distancia, UNED) - Álvarez Fernández, Esteban (University of Salamanca)

Abstract format: Oral

This communication introduces aspects of the management and transformation of deer antler by hunter-gatherer groups during the Cantabrian Magdalenian (17-14 Ka cal BP), and specifically in the Sella valley. Numerous Magdalenian sites are concentrated in this region, making the study of their material remains interesting to determine the potential particularities of a specific territory inhabited by human groups. To this end, more than a hundred remains of this raw material from the archaeological site of Cova Rosa (Asturias, Northern Spain) have been analyzed. The examination of these antler remains, from an anatomical, taxonomic, typological and technological point of view, has allowed us to distinguish several strategies for the collection and selection of the antler, as well as to reconstruct part of the „chaîne opératoire“ of the manufacture of tools at this site. This study has also enabled us to introduce aspects of the use and recycling of the tools. Finally, through a bibliographical review of studies of the osseous industry in the Sella valley, we can confirm a relative homogeneity, at least topologically, of osseous tools in the archaeological record. Ultimately, this communication highlights the need for the inclusion of these methodological approaches in research on deer antler working during the Magdalenian period in the studied territory.

5 **CONSUMPTION OF FAT IN THE MAGDALENIAN: STUDY OF THE FRACTURING PATTERNS OF PHALANGES FROM TITO BUSTILLO CAVE (RIBADESELLA, ASTURIAS, SPAIN)**

Abstract author(s): Arones Abad, Marco (Universidad de Salamanca) - Portero, Rodrigo (Universidad de Salamanca; Instituto de Investigaciones Prehistóricas de Cantabria) - Cueto, Marián (Universitat Autònoma de Barcelona) - Tapia, Jesús (Sociedad de Ciencias Aranzadi) - Álvarez-Fernández, Esteban (Universidad de Salamanca)

Abstract format: Oral

Fat is a basic element in the human diet both for its high energy balance and for the multiple physiological functions performed by lipid components. The consumption of fat from the bone marrow obtained through the intentional fracturing of bones is widely attested in the Cantabrian Upper Paleolithic. In this study, the fracturing patterns of the phalanges of mammals (one of the last reserves of fat in an animal) are evaluated with the aim of identifying the patterns of their processing and verifying whether cultural inferences can be made in this regard. To this end, bone remains recovered from the Dwelling Area in Tito Bustillo Cave (Ribadesella, Asturias, Spain), one of the most representative Magdalenian sites on the Cantabrian coast, are analyzed. In turn, the archaeozoological analysis of this study aims to be an approximation to the capture of resources and the mobility of Paleolithic groups in the Sella valley.

6 **SUBSISTENCE STRATEGIES AND TERRITORIAL MANAGEMENT ON THE LOWER MAGDALENIAN AT EL CIERRO CAVE (RIBADESELLA, ASTURIAS, SPAIN)**

Abstract author(s): Portero Hernández, Rodrigo (University of Salamanca) - Cueto Rapado, Marián (Autonomous University of Barcelona) - Elorza, Mikel (Aranzadi Science Society) - García-Villanova, Rafael - Álvarez-Fernández, Esteban (University of Salamanca)

Abstract format: Oral

El Cierro cave (Ribadesella, Asturias, Spain) has one of the most complete stratigraphies in Cantabrian Spain, with different levels spanning the Middle Palaeolithic to the Mesolithic. In this conference we discuss the zooarchaeological analysis of the Lower Magdalenian levels, Cierro G1, Cierro G and Cierro F, resulting from the archaeological fieldwork carried out in the site between 1976 and 1979 by F. Jordá Cerdá and A. Gómez Fuentes, and those carried out in 2014 by E. Álvarez-Fernández. These levels have been dated between 20 and 17 ky cal BP.

The analysis of the faunal remains from these levels has documented the presence of macromammals, fish, molluscs, and birds. Through taphonomic analysis we determined the role played by the different animal resources in the diet of the Magdalenian hunter-gatherers, establishing the processing and consumption of prey and the seasonality of their captures. In addition, we calculate the caloric energy and nutritional intake of these resources in relation to the cost of searching, handling, and transporting them. This allows us to approach the ways in which human groups managed the resources in their environment and to compare the results at different times of Magdalenian occupation of the cave.

7 IDENTIFYING FRESHWATER TURTLES AND TERRESTRIAL TORTOISES IN THE ARCHAEOLOGICAL RECORD TO STUDY MOBILITY, TRADE, AND RESOURCE USE IN THE MEDITERRANEAN

Abstract author(s): Chorro-Giner, Marina (University of Sheffield; Archaeology.biz)

Abstract format: Oral

Terrestrial tortoises and freshwater turtles have been exploited by humans across the Mediterranean since the early Pleistocene; they were exploited for food, raw materials for crafts, and had symbolic values. By studying the remains of different species we can explore how different Mediterranean communities interacted with their resources and the mechanisms of trade and exchange that may have existed. Most of these species occupy distinct regional areas, thus they make excellent proxies to study mobility, trade, and cultural interactions. However, the difficulty in identifying and differentiating terrestrial tortoises and freshwater turtles in the archaeological record makes this task especially challenging. Current methodologies rely on the use of morphological traits for the differentiation and identification of species, which requires specialist knowledge and can be highly subjective, leading to mis- and under identification. To improve the study of these species, a new methodology based on morphometry is here proposed. With this new approach, we can improve our ability to reliably identify these species in the archaeological record, a critical step in unlocking the potential for these assemblages to inform on the people who exploited them and their environment. This paper explores the potential for the establishment of a new morphometric approach to the study of terrestrial tortoises and freshwater turtles in the Mediterranean through the study of zoological and zooarchaeological collections. Once established, morphometric approaches can be applied easily and affordably to a wide range of archaeological collections allowing for new research opportunities and a better understanding of mobility, trade, and cultural interactions across the Mediterranean from prehistory to post-medieval times, which will be illustrated through case studies.

8 NEW DATA ABOUT SHELLFISH GATHERING DURING THE LATE PLEISTOCENE IN THE SELLA VALLEY

Abstract author(s): Marchán, Alberto (Universidad de Salamanca, Departamento de Prehistoria, Historia Antigua y Arqueología) - Uribesalgo, Amaia (Universitat Autònoma de Barcelona, Departament de Prehistòria) - Cueto, Marián (Instituto Internacional de Investigaciones Prehistóricas de Cantabria - IIIPC, Universidad de Cantabria) - Jordá Pardo, Jesús (UNED, Laboratorio de Estudios Paleolíticos, Departamento de Prehistoria y Arqueología) - Martínez Villa, Alberto (Centro Ecomuseo de la Fauna Glacial de Onís) - Tapia, Jesús (Sociedad de Ciencias Aranzadi) - Álvarez-Fernández, Esteban (Universidad de Salamanca, Departamento de Prehistoria, Historia Antigua y Arqueología)

Abstract format: Oral

This communication presents the results of the analysis of archaeomalacological remains from archaeological excavations in the Sella valley (Asturias, Spain). Shells from Tito Bustillo (Dwelling Area, SUs 101 to 104), Cova Rosa (Layers AO to B11), La Lloseta (Clark Sector, Level VI) and El Cierro (Sala de la Natividad, Levels 3 and 4) have been studied. This analysis has been performed from a taxonomic, quantitative, taphonomic and biometric point of view. In the selected sample, species collected for their bromatological interest prevail (mainly *Patella vulgata* and *Littorina littorea*), although taxa of no food value have also been documented. Anthropogenic alterations have been detected in the shells, ranging from thermoalteration to fractures caused by limpet collection. The latter alteration has been identified by experimentation with current specimens. The results obtained in this study are compared with existing information on nearby sites, reflecting on the mobility of shellfishing groups in the Sella valley during the Magdalenian period.

9 HERDING IN THE DESERT: ANIMAL MANAGEMENT, SETTLEMENT STRATEGIES, AND CULTURAL DYNAMICS THROUGH BIOMOLECULAR ARCHAEOZOOLOGY IN THE HOLOCENE CENTRAL SAHARA

Abstract author(s): Di Matteo, Martina (Department of Ancient World Studies, Sapienza University of Rome) - McGrath, Krista (Department of Prehistory & Institute of Environmental Science and Technology - ICTA, Universitat Autònoma de Barcelona) - Soncin, Silvia (Department of Environmental Biology, Sapienza University of Rome) - di Lernia, Savino (Department of Ancient World Studies, Sapienza University of Rome; GAES, University of the Witwatersrand)

Abstract format: Oral

Pastoralism is seen as a lifestyle in which animal husbandry and mobility are fundamental elements. Animals and movements define how humans perceive and live in the world. Animal resources provide a vehicle for lasting social relationships in pastoral societies, relationships that are maintained across generations.

Due to its flexibility and mobility, pastoralism is considered a resilient adaptation strategy and key to ecological uncertainties and social pressures.

The study of pastoral phases in Saharan contexts, and those from hyper-arid environments, is affected by a highly fragmented zooarchaeological record, which leads to limited taxonomic determinations. This causes a lacunose picture of the animal species exploited in the past.

“Zooarchaeology by Mass Spectrometry” (ZooMS), offers new research perspectives on animal management strategies in this context by identifying morphologically ambiguous or unidentifiable bone fragments.

ZooMS applied to faunal remains referable to pastoral sites (8300-4600 years ago calibrated) from the Central Sahara (SW Libya) has the potential to better define the relationship between animals, humans, and the territory, in one of the areas with the oldest evidence of domesticated animals in the African continent.

Using this biomolecular approach, this paper deepens the characteristics of Saharan pastoralism through a detailed analysis of how animal resources were exploited and managed. It also permits the identification of those species that are still ‘invisible’ in the archaeozoological record (like sheep and goats) but represent important pastoral cultural markers. This furthermore helps to better evaluate the seasonal mobility systems enacted to cope with an unstable and unpredictable environment.

10 HISTORICAL SOURCES FOR THE STUDY OF PREHISTORIC COASTAL SOCIETIES IN NORTH IBERIA: BEYOND ANALOGIES

Abstract author(s): León Cristóbal, Alejandro - Fano, Miguel Ángel (Universidad de La Rioja)

Abstract format: Oral

In recent years, knowledge of the use of coastal areas in north Iberia by hunter-gatherer societies has been favoured by the application of sophisticated analytical techniques that generate data of special interest for the study of the archaeological phenomenon of shell-middens. However, the limits of our work are still marked by the ‘archaeological record’, and therefore it is assumed that strictly social aspects, or social organisation, lie outside the scope of our possibilities of interpretation, since they do not crystallise in archaeological materiality. It is now some time since the North American view of ‘Archaeology as Anthropology’ built bridges towards the ‘dynamics’ of past societies. Our own academic tradition has also applied ethno-archaeological approaches, from a different perspective, such as the one carried out on Yamana society. The interest of actualist approaches is still valid, possibly today more than ever, owing to the need to furnish the new data with an interpretative theoretical framework in which they can acquire their full value. We accept that information about historical hunter-gatherer societies, such as the descriptions of those who took part in the colonisation of America, can be used in the formulation of hypotheses, in order to widen the choice of questions to ask of the archaeological record corresponding to the Mesolithic and early Neolithic on the Cantabrian coast; in sum, to add new tools to our study methodology. This communication will present the theoretical proposal and assess the possibilities offered in relation to all this by historical sources (15th century and thereafter) that describe the coastal hunter-gatherer societies and incipient farming communities known to Spanish chroniclers in America. Priests, sailors and soldiers provided information about their economy and social organisation, among other aspects.

11 WALKING IN CATTLE SHOES: THE EFFECT OF ENVIRONMENT ON THE MORPHOLOGY OF BOS PHALANGES

Abstract author(s): Yousef Pouran, Kaveh - Saña, Maria - Alcàntara Fors, Roger (Archaeozoology Laboratory, Departament de Prehistòria, Universitat Autònoma de Barcelona)

Abstract format: Oral

The analysis of spatially small-scale movements can elucidate the sociocultural structure of the Neolithic communities at a higher resolution and in finer detail than the study of large-scale expansions. Like long-distance movements, some short-distance communications between settlements were facilitated by animals, such as cattle, as transportation mediums or subjects of trade. Any change in animal locomotion pattern resulting from travelling with humans can be potentially reflected by long bones such as metapodials and phalanges. However, in the case of spatially small movements, and due to the shorter travelled distance, the said effect is harder to detect even for cart-pulling cows, especially the younger ones. This can happen if the mechanosensor cells do not receive enough stimulation to trigger bone remodelling, and consequently, the resultant macroscopic morphological changes are harder and even impossible to detect. All things considered, if the short distance included a significant variation in the mechano-environment of the animal in question, then the morphological changes will be detectable. Such a scenario is common in mountainous areas where, over a short trip, walking on a more or less flat land turns into a physically demanding climb. In this regard, Pixarelles cave provides an exceptionally unique opportunity to study small-scale movements between the (Iberian) middle neolithic communities. It is in a mountainous region, slanting enough to affect the animal's loco-

motory system permanently. The main objective was to determine if Bos were being herded locally in Pixarelles or if they had been transferred from neighbouring societies. Finite element analysis confirmed that the observed variation reflects the effect of the environment, such as the slope of the ground, on the cattle locomotory system. It was concluded that the cave consisted of various assortments of cattle, some local to the mountainous nearby area, others from more flatland, and some experienced hard labour exploitation.

12 SHIFTING LANDSCAPES, CHA(LLE)NGING IDENTITIES? WANDERING COMMUNITIES BETWEEN CARPATHIANS AND LOWER DANUBE IN THE TWILIGHT OF EARLY IRON AGE

Abstract author(s): Mandescu, Dragos (Arges County Museum)

Abstract format: Oral

On the territory between Carpathians and Lower Danube (southern Romania), the transition from the middle stage of the Early Iron Age to the late one (during the end of the 8th c. and the first half of the 7th c. BC) involves structural transformations due to the dissolution of the Basarabi cultural unity and the emergence of various cultural groups that share different smaller territories. The paper will focus on the habitat changes and transformations that occurred in the funerary domain during this specific period in one of these smaller cultural groups, namely the Fergile group. The favorite habitat territories of the vanishing Basarabi culture, such as the Danube Plain, are abandoned and new areas are occupied instead, especially the high submontane hills rich in salt (a must-have resource for herds). Many cremation necropolises appear, but the settlements are missing. The absence of significant settlements, contrasting with the stable previous Basarabi habitats, outlines the idea of increased population mobility. This also means a change in the economy, from one predominantly based on agriculture, to one focused on animal husbandry, always on the road in search of new pastures for herds. The meat offerings from the graves belong to species suitable for transhumance. The alignment of the cemeteries along the rivers seems to indicate precisely the transhumance routes of these much more mobile populations than those of the Basarabi culture. The horse, as agent of mobility, takes on an increasingly significant place within communities, as can be seen from the widespread distribution of horse gear and even horse bones in some graves. The question that remains is whether this clear change in environmental and economic patterns is the result of an old population adapting to new realities, or are we dealing with a dramatic population replacement?

13 ZOOARCHAEOLOGY OF EARLY IRON AGE IN CENTRAL SPAIN: THE SITE OF CERRO DE SAN VICENTE (SALAMANCA, SPAIN)

Abstract author(s): Pazos García, Rocío (Universidad de Salamanca) - Saña Seguí, María (Universitat Autònoma de Barcelona)

Abstract format: Oral

This presentation will show the first results of the zooarchaeological and taphonomic analysis of the Early Iron Age settlement Cerro de San Vicente (Salamanca, Spain). A sample of the faunal remains from the 7th-6th centuries BC midden excavated during successive campaigns (2006, 2017, 2021 and 2022) has been studied, which corresponds to the discarded culinary waste from an aristocratic district of the settlement where sumptuary products from the Eastern Mediterranean were documented. It will give us an insight into the organisation of food resources of animal origin at the site during these centuries. We will examine questions such as the composition of the livestock, the permanence of hunting activities, the use of animals as pets, the socio-economic status of its inhabitants, etc. For this purpose, the remains were analysed from an anatomical and taxonomic point of view. The NR, NISP, MNE and MNI were calculated to estimate the volume of fauna that occupied the site. Subsequently, using bone fusion standards and dental eruption and wear, the age at which individuals died was determined. Finally, a taphonomic analysis of the marks found in the archaeological material (anthropogenic, produced by carnivores, and by natural agents) was carried out. This research will show which species were part of the settlement, and will be compared with other sites of similar chronology on the Iberian Peninsula.

14 CATTLE MOBILITY FROM THE MEDITERRANEAN TO PRESENT-DAY AUSTRIA DURING THE IRON AGE: COMBINING ANCIENT MITOCHONDRIAL DNA ANALYSIS AND MORPHOMETRY

Abstract author(s): Saliari, Konstantina (Naturhistorisches Museum Wien) - Amory, Christina (Institute of Legal Medicine, Medical University of Innsbruck) - Draganits, Erich (Department of Geology, University of Vienna) - Rams, Peter (Institute of Prehistory and Historical Archaeology, University of Vienna) - Tobias, Bendeguz (Institute for Medieval Research, Austrian Academy of Sciences) - Pucher, Erich (Natural History Museum Vienna) - Parson, Walther (Institute of Legal Medicine, Medical University of Innsbruck)

Abstract format: Oral

Morphometric examinations on cattle bones from Roman period sites in present-day Austria suggest the arrival of a new cattle population, which has been connected with the conquest of this area by the Romans and related imports

of cattle from the South. However, recent finds of cattle remains, similar to those found in the Roman period, in two late Iron Age sites suggest import of cattle from the Mediterranean already long before the arrival of the Romans. Ancient mitochondrial DNA analysis on fourteen Iron Age and Roman period cattle teeth and bones provide for first time clear evidence on cattle mobility from the Mediterranean to areas north of the Alps through the documentation of haplogroups T1 and T5. Our results offer new archaeogenetic data, help testing established morphometric criteria used for the study of the various Iron Age and Roman period cattle morphotypes, offer insights into the origins and evolution of local cattle populations in present-day Austria and suggest contacts and complex mechanisms of live-stock exchange during the late Iron Age, before the arrival of the Romans.

A. POPULATION GENOMICS AND DOMESTICATION HISTORY OF YAKS FROM THE INDIAN HIMALAYA: PRELIMINARY INSIGHTS FROM ANCIENT DNA

Abstract author(s): Natesh, Meghana - Witonsky, David (University of Chicago) - Ota, S B (Archaeological Survey of India) - Joglekar, Pramod (Deccan College) - Raghavan, Maanasa (University of Chicago) - Rai, Niraj (Birbal Sahni Institute of Paleosciences)

Abstract format: Poster

Domestication has played an important role in human history, particularly over the Holocene. DNA-based analysis on domesticates and their wild relatives has helped to elucidate the genomic changes underlying domestication. Where possible, the addition of ancient and historical samples has helped enrich our understanding of the time-scale and the evolutionary history of the domesticates.

Yaks (*Bos grunniens*) are a bovid species endemic to the high elevations (~ 3000 – 6000 MSL) of the Tibetan plateau and surrounding regions, including the Himalayas. They are adapted to the harsh environment at high elevations, including hypoxic conditions, grazing on short grasses, and high UV exposure. Yaks form an integral component of many high high-altitude Himalayan human communities in India. Genomic data from modern yaks from Tibet places the domestication event close to 7,300 YBP, coinciding with human population expansions in the region (Qiu et al., 2015). We aim to analyse ancient yak DNA from the Ladakh region in Northern India, in addition to modern domestic and wild yak, to study their genomic history and the timing of domestication.

DNA was extracted from bone samples (n=6; morphologically identified as yaks) from archaeological sites in Ladakh, and screened for endogenous content. The DNA was mapped against yak and cow reference sequences to confirm species identity. Our preliminary results from low coverage sequencing suggest that the DNA originates from yaks and contains damage signals consistent with ancient samples. A preliminary mitochondrial phylogeny confirms their identity as yaks. Based on further sequencing data from the samples, we will analyse nuclear variation to examine their demographic history and divergence from cattle and wild yaks.

B. ONLY HARNESSSES AND HORSES. COULD HUMAN SKELETAL TRAUMA BE THE EARLIEST EVIDENCE OF HORSE-RIDING IN NORTH-WEST EUROPE?

Abstract author(s): Grzybowska, Milena (Archaeological Research Services Ltd)

Abstract format: Poster

Identification of the earliest examples of horse utilisation relies heavily on preservation of harnessing equipment (i.e. cheek pieces, terrets etc.) and the analysis of animal bone assemblages. This paper highlights one under-explored avenue of research that may offer complementary data to this subject, namely the analysis of human skeletal trauma and its potential to furnish new information on horseback riding.

This case study focuses on multiple skeletal lesions of an adolescent female, radiocarbon dated to the Early Bronze Age, and placed centrally within a ring ditch in Ponteland, Northumberland (England). The investigation was prompted by the results of prior analysis of the individual's widespread perimortem trauma, best understood as concomitant injuries induced by a high velocity fall, that had occurred most likely while travelling at speed.

This phase of research focuses on a detailed characterisation of pelvic morphology, and characterisation and understanding of possible aetiologies of antemortem injuries suffered by the adolescent. This was achieved with help of three-dimensional modelling as well as microscopic and radiographic imaging. Results were then considered in the light of current medical research on equestrian/sport injuries.

The skeletal remains of the adolescent presented a host of evidence that was indicative of a specific set of conditions associated with the observed trauma. All identified skeletal changes, although not specific to horseback riders, frequently occur among this sport group. This evidence is reviewed against wider regional evidence for horsemanship to consider the potential for human skeletal evidence to contribute to this important area of study.

Session theme: 3. Heritage Narratives and Representations

Session organisers: Mele, Marko (Universalmuseum Joanneum) - Fabian, Szilvia (Hungarian National Museum) - Mihelić, Sanjin (Archaeological Museum Zagreb)

Session format: Regular session

Archaeology is continuously juggling the need toward ever refined specialization and the necessity of opening up to wider reaches of society. The first force drives our discipline to sharpen its focus on increasingly smaller segments, while the other stimulates us to develop empathy towards local communities, local authorities, NGOs or the tourism sector. The ongoing trend of demanding an ever more abundant body of evidence from our profession towards the society to justify public funding, has arguably shrank the size of the financial pie for undiluted research. On the other hand it has also inspired us to open our minds and hone our soft skills in dealing with others in the public/private arena in a synergistic search for common benefits.

Routed Archaeology EAA sessions have for the past few years aimed to bring together professionals who have subscribed to the idea that a participative approach to governance of archaeological heritage is either the solution, or at least a useful methodological framework for deciding and acting for the benefit of everyone across the stakeholder spectrum, not least our discipline or local communities.

In searching for tested and proven examples that participative approach is a valuable and useful strategy we once again wish to put forward in this session series the concept of cultural routes, as they offer a highly useful context for constructive alignment of otherwise often conflicting objectives advocated by diverse stakeholders.

Alongside practical and theoretical contributions on cultural routes we invite also discussions on the most important documents that have substantially shaped our approach to dealing with archaeological heritage, such as the Faro Convention and the brand new ICOMOS International Cultural Heritage Tourism Charter: Reinforcing Cultural Heritage Protection and Community Resilience through Responsible and Sustainable Tourism Management.

ABSTRACTS

1 ARCHAEOLOGICAL ROUTES - CHALLENGES OF THE SUSTAINABLE EXPANSION OF NETWORKS

Abstract author(s): Mele, Marko (Universalmuseum Joanneum GmbH)

Abstract format: Oral

International cultural routes are strongly depending on networks, which sustain, support and upgrade the existing offers on sites or in museums. Such networks are mostly established by heritage institutions, museums, monument protection authorities, NGOs or private associations in the cultural sector. At the beginning such networks are rather simply to establish and to sustain, since the mentioned members have very similar interests and joint benefits. The challenge that such initiatives have is, how to diversify their network to expand their activities and find new approaches and resources for the protection, promotion and sustainable touristic use of archaeological heritage. This second step is mostly quite difficult, since the network is faced with stakeholders, which are not only or even at all responsible for cultural heritage, but might be focused on completely different tasks, like local or regional development, policy making, tourism, spatial planning, production of goods and offering services, education.... Which benefits are interesting for different stakeholders to join the network? Which tools should be developed to successfully include stakeholders from different spheres of society? Besides the general analysis of the described challenges and potential solutions, the author will include practical experiences of the establishment of the Iron Age Danube Route in Austrian Styria.

2 CULTURAL ROUTE OF SELECTED TRADITIONAL PROFESSIONS OF IOANNINA, EPIRUS, GREECE

Abstract author(s): Kosta, Elissavet (University of Ioannina)

Abstract format: Oral

In the context of the present study, a cultural route is proposed which focuses on selected traditional professions of Ioannina from the liberation of the city and then, which used as a base the area around the castle and the lake of Ioannina, Epirus, Greece.

A cultural route is defined as a product of cultural tourism which is formed based on a specific cohesive element. The cultural route proposed through the present research includes the following traditional jobs of Ioannina: traditional shoes makers, tanners, silver smiths and traders. The stations where the professionals were active in the city of Ioannina will be selected as stations of the route.

The relatively recent institution of the cultural route is, due to its capacity, an important “tool” for the exploitation of cultural heritage. Cultural routes are quite widespread on the European continent as they offer opportunities for the exploitation and promotion of cultural heritage.

The cultural routes include possibilities for the creation of new tourist products, maintaining the dynamics created by the new trends of tourism, something that we consider necessary for the city of Ioannina. It is important to understand that the creation of new cultural tourism products from existing resources, in our case the traditional professions, is one of the most effective strategies to be able to make a destination special.

In addition, the points of interest included in the route will help residents and visitors to understand the traditional jobs better, as the route creates an atmosphere of “merging” materials and intangible cultural elements in a network with the aim of better interpreting the topic.

3 **A MATCH MADE IN HEAVEN: SYNERGY BETWEEN MUSEUMS AND CULTURAL ROUTES - A CASE STUDY**

Abstract author(s): Rakvin, Marta (University of Zagreb, Faculty of Humanities and Social Sciences; Iron Age Danube Route Association) - Balen, Jacqueline (Archaeological Museum in Zagreb)

Abstract format: Oral

Sustainable management is one of the biggest challenges in the management of archaeological heritage. Proposed solutions should strive to find ways to successfully integrate archaeological heritage into cultural tourism offer of a particular region in a scientifically accurate way and to create palpable benefits for the stakeholders involved, while simultaneously preserving the heritage in question. Furthermore, the emphasis must be placed on the local communities, which must be educated in order to be able to recognize the value of heritage situated in their vicinity. In this regard, the cultural routes programme of the Council of Europe has proven to be very successful. As one its certified routes, the Iron Age Danube Route is a network where visitors can discover Iron Age landscapes and heritage through archaeological and open-air museums, reconstructed houses and tumuli, as well as through archaeological trails. In addition, the Route acts as a platform where experts, institutions, organizations, small and medium enterprises and non-governmental organizations can meet, collaborate, practice and develop sustainable models of heritage management. In doing so, heritage institutions, especially museums (as members of the Route), play an extremely important role. During the recent years, the role of museums has shifted and turned them into places of increasing inclusion and involvement with the community and its sustainable development. Within the framework of the Council of Europe’s cultural route networks, museums act as custodians of heritage, interpreters, and focal points of cultural tourism content.

In this paper, we are going to present the ways in which the Archaeological museum in Zagreb embarked on this new venture as one of the members of the Iron Age Danube Route.

4 **PARTICIPATIVE APPROACH IN CREATION OF SUSTAINABLE CULTURAL DESTINATION**

Abstract author(s): Jozic, Antonija (Prefect of Pozega Slavonia County) - Lukacevic, Marijana (project associate)

Abstract format: Oral

The well-known archaeological sites from the early Iron Age Kaptol - Gradca and Kaptol - Cemernica are located in the Pozega Slavonia County, above the village of Kaptol, within the borders of the Papuk Nature Park and the UNESCO Geopark. The mentioned archaeological sites have been continuously researched for 23 years and numerous scientific facts about the life of this Hallstatt community have been discovered and provide a wide range of presentation scientifically supported topics. Through the implementation of the Interreg Iron Age Danube project, an educational trail „ Paths of the Warriors - Early Iron Age in the Pozega Basin“ was created with 11 educational boards. In 2021, this educational trail became part of the cultural route with the certificate of the Council of Europe „Iron Age Danube Route“, and connects Croatia and Kaptol with 7 other European countries and archaeological sites. Regional and local authorities recognized the importance of this brand and directed their financial investments and actions into the presentation of the sites. Regional and local authorities, Pozega Slavonia County, Kaptol Municipality, other public institutions in the service of society and scientific institutions have recognized that a model of joint cooperation and an interdisciplinary approach of the presentation and preservation of the mentioned archaeological sites is the only correct way to create a sustainable tourist destination of cultural tourism. This presentation will explain the model of joint cooperation of all stakeholders in the area of archaeological sites Kaptol - Gradca and Kaptol - Cemernica. The Pozega Slavonia County and the Municipality of Kaptol, as applicants and investors of projects financed by the EU, strongly support the development of the destination of archaeological cultural tourism, what the local community recognized and also participate in the sustainable creation and management of this tourist destination.

5 UNDERGROUND4VALUE: ACTIVATING COMMUNITY TRANSITIONS TOWARDS SUSTAINABLE AND INCLUSIVE HERITAGE INTERPRETATION AND VALORISATION

Abstract author(s): Pace, Giuseppe (Institute of Studies on the Mediterranean ISMed-CNR)

Abstract format: Oral

With a focus on the Underground Built Heritage (UBH), the COST Action underground4value explores different processes to guide local promoters, municipalities, practitioners, scholars, community leaders, and stakeholders in their valorisation activities. Moving from process-oriented and goal-oriented to practice-oriented approaches, the Action defines a multi-disciplinary step-by-step methodology, the Strategic Transition Practice (STP), structured in four phases and eight blocks, but designing a process dynamic, interactive, flexible, and adaptable to different contexts and level of maturity. This methodology is intrinsically dependent on the value attributed to the heritage by local cultures and practices, on the formal and informal planning regimes, on how the process is adapted to local contexts and how the communities empowered. This theoretical approach has been experimented, validated, and implemented in 12 case-studies with the establishment of living labs differently designed for specific cultures, goals, sites, and organisations, with the organisation of scientific missions and of a training school, for some cases.

With the scope of facilitating the dialogue between global heritage community and local communities, local experiments stimulated communities to focus on a people-centred approach, to the interdisciplinary interaction and cross-fertilisation, and towards a strategic thinking process. By providing access to information or resources not easily available at local level, and supporting stakeholders in developing partnerships, the living labs' activities demonstrated the value-added by working together, enhanced democratic governance, and ensured relevant and effective decision-making. Finally, it favoured sustainability transitions and integrated heritage conservation strategies within the larger goals of the overall sustainable development, by providing deeper knowledge for allowing local communities to develop, nurture, experiment, and learn in real-life circumstances. In many cases, this approach promoted experimentation, learning, and sharing ideas at community level, and innovative schemes for the heritage perception, interpretation, and management.

6 THE ROMAN WAY

Abstract author(s): Czifra, Szabolcs - Kovács, Loránd Olivér - Fábrián, Szilvia - Pálkás, Adrienn (Hungarian National Museum)

Abstract format: Oral

Heritage tourism is a journey to visit places and participate in activities that authentically represent the past and present, connecting people who lived then and now. It includes historical, cultural and natural attractions. This experience-based touristic offer can incorporate the extraordinary wealth of our museums and collections, the exceptional atmosphere of our towns and villages and the uniqueness of our landscapes.

This special interweaving is particularly striking in the Balaton uplands, where our landscapes show an impressive diversity, from the almost untouched natural environment, through the landscape shaped by centuries of human activity, to the cities. Even 1500 years later, the features that made this area attractive to the Romans are still recognisable and archaeology helps to uncover and visualize these traces. Farming, at a high level, cultivating vineyards and the remains of their villa estates around the Lake proves that the Romans once settled here were not only experts of farming but also consumers with refined tastes, in many cases associated with extravagant preparation of dishes, consumption of exotic foodstuff and luxury wines - mostly from silver vessels. The remains of these practices and the rural luxury of the elite on the territory of the former province of Pannonia are best preserved by the Villa Romana Baláca. Our presentation showcases the revitalization process of the villa, and how we interweaved the heritage promotion approaches of the Underground4Value and Danube's Archaeological eLandscapes projects into the cooperation between the Hungarian National Museum, the local municipality and SMEs for the improvement of the heritage tourism offer under the umbrella of the Veszprém-Balaton 2023 ECOC program.

Acknowledgement

This abstract is partially based upon work from the COST Action 18110 'Underground Built Heritage as catalyser for Community Valorisation', supported by COST Association. The author gratefully acknowledges the COST association for the financial support.

7 SYNERGY OF SOCIAL REGISTERS: THE HUNGARIAN NATIONAL MUSEUM ON THE ROAD OF DEVELOPING COMMUNITY INVOLVEMENT IN ARCHAEOLOGICAL PRACTICES

Abstract author(s): Petervary, Tamas (Hungarian National Museum - Magyar Nemzeti Múzeum) - Rózsa, Zoltán (Hungarian National Museum, Head of the Department of Community Archaeology)

Abstract format: Oral

In early 2022, the Hungarian National Museum set up its Department of Community Archaeology (DCA). The reason d'être for this brave and - in a civic sense - even controversial and provocative step towards community involvement in archaeological research deserves an explanation. This paper provides (1) a summary of the socio-historical context in which civic initiatives tend to operate in Hungary, (2) an introduction of the goals and the structural/functional layout of the department, (3) an overview of the work so far completed under the auspices of the department, (4) a self-critical evaluation of our achievements in terms of social involvement, life-long learning and public reach. The aim of this presentation is (a) to bring our initiative onto an international stage and so to share our experiences in the field of community involvement, (b) to broaden our worldwide network of exchanging ideas and practices, (c) and to spur further collaborations of parties dealing with community archaeology.

8 CULTURAL ROUTES AS VEHICLES OF SUSTAINABLE TOURISM MANAGEMENT: WE ARE ALL IN THIS TOGETHER

Abstract author(s): Mihelic, Sanjin (Archaeological Museum in Zagreb)

Abstract format: Oral

A lasting contribution by the cultural routes approach is the idea that heritage is a common resource whose governance and enjoyment is not a prerogative of a single group or entity, but a shared right and responsibility. Over the years, cultural routes have proven an excellent vehicle for bringing the various stakeholders together in the perennial battle for the protection and preservation of cultural heritage.

This paper looks at some of the key doctrinal documents that have shaped the approach of the archaeological profession with regard to the protection of archaeological heritage, with an emphasis on the roles and rights of non-professionals - local communities in particular. Alongside the Convention on the Value of Cultural Heritage for Society (Faro Convention), a special focus is awarded to the revised International Cultural Tourism Charter, which—twenty-two years after its last version—has explored ways in which stakeholder collaboration and participatory governance may lead to enhanced and more beneficial stewardship of cultural heritage. The Charter's principles and objectives are discussed and illustrated with real-life examples from archaeological contexts around the globe.

696 CLOTH CULTURES IN AND BEYOND VIKING AGE [EAA COMTEX]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Andersson Strand, Eva (Centre for Textile Research; University of Copenhagen) - Harris, Susanna (School of Humanities; University of Glasgow) - Mannering, Ulla (National Museum of Denmark) - Wallace Walser III, Joe (National Museum Of Iceland) - Vedeler, Marianne (Museum of Culture History; Univ. of Oslo)

Session format: Regular session

The period AD 650-1150 offers a rich set of data of textiles, leather, fur objects and textile tools from rural and urban settlements as well as burials in Denmark, Norway, Iceland, and Sweden alongside other regions, such as Ireland, the UK and Russia. Previous scholarship has indicated that a series of changes took place in clothing traditions, textile design, technology, and the organization of textile production on the threshold of the Middle Ages (Bender Jørgensen 1986).

New studies have shown that research on cloth culture holds great potential for general archaeological interpretations of the development of society. Cloth culture is based on the idea that all societies use cloth-type materials, such as textiles and leather, but how they do this is specific to each culture (Harris 2010). It is clear that textiles and textile production played a major role and had an economic, social and cultural impact on Viking Age society (Andersson Strand 2021). By integrating established methods of textile analysis with new innovative methods, such as proteomics and aDNA-analyses combined with a clear theoretical framework, a better and more diverse understanding of textile and skin crafts and their importance can be gained.

In this session, we will facilitate new and innovative perspectives and insights into Viking Age Cloth Cultures. We invite all scholars working with questions and materials related to new knowledge about Viking Age textiles and clothing, craft technologies and knowhow about the significance of textiles and textile production in general.

1 TEXTILE RESOURCES IN VIKING AGE LANDSCAPES -TRIVAL

Abstract author(s): Andersson Strand, Eva (Centre for Textile Research; University of Copenhagen)

Abstract format: Oral

Knowledge of textile history is a key to our understanding of society. In the last decade, there has been a growing interest in the use and exploration of Viking Age landscapes and its connection to the development of production and trade. Research has suggested the intensification of iron and tar production, implying new ways of organizing production, which influenced the whole structure of Viking Age society. Textile research clearly indicates a new and increasing need of sails and a change in the textiles and clothing produced in the Viking Age. However, textile resources as a marker of large-scale production and exploration of land has hitherto never been investigated. In a new project Textile Resources in Viking Age Landscapes – TriVaL funded by the Independent Research Fund Denmark we will combine landscape analysis of textile resources with analysis of textiles, textile tools, and contexts investigations to determine the variation, organization and impact of textile production on the Danish Viking Age landscape and settlement structures. The overarching aim of is to contribute to the understanding of the great needs for textiles resources and its impact on the use of the Danish landscapes and influences on settlement structure with case studies around Limfjorden and East Zealand. Furthermore, to integrate the results and make them visible and accessible to the study of socio-political structures. The project is truly interdisciplinary with participants covering different research fields, humanities, as well as natural and digital disciplines. In this presentation, I will give a brief overview of the project and the first results and further discuss the advantages’ and disadvantages working in a truly interdisciplinary environment.

2 VIKING AGE AESTHETICS: CLOTH CULTURES IN THE BALTIC REGION

Abstract author(s): Rammo, Riina (Department of Archaeology, University of Tartu (Estonia))

Abstract format: Oral

The Viking Age Period does not offer a rich set of textile-type materials in Estonia due to the dominating cremation burial custom in the area. This is why the area has remained blank on the map of the Viking Age cloth cultures around the Baltic Sea. The earliest archaeologically investigated inhumation cemetery in Raatvere (Eastern Estonia) is dated to the 11th century. This site is exceptional in Estonia as numerous textile fragments from the deceased’s clothing have been preserved thanks to favourable conditions. This unique textile corpus has recently been reexamined with modern methods such as microscopy for fibre identification and chemical dye analyses. The presentation aims to look at the Raatvere textile finds in the context of the wider Baltic region. The Raatvere textiles represent a specific cloth culture in terms of technology, aesthetic values, and functionality sharing similar values with contemporaneous Finnish finds in the north. For example, the preference for various 2/2 twill weaves woven with plied warp (Sz) and single weft (z) can be pointed out as one of the easiest to notice. Although the Baltic Sea had a connecting role, which enabled trade, migration and cultural exchange, the Raatvere finds seem remarkably different from the Scandinavian Viking Age textiles at first sight. However, it can be argued that certain features of textiles, especially the aesthetic ones, were shared in the different cloth cultures in the Baltic region. The presentation will explore these shared features and the nature of the contacts they reflect.

3 A MOMENT IN TIME: CLOTH CULTURE OF AN EARLY MEDIEVAL HOARD BURIED IN GALLOWAY, SCOTLAND, 900 CE

Abstract author(s): Makin, Alexandra - Harris, Susanna (University of Glasgow)

Abstract format: Oral

Cloth culture provides the framework to recognise the cultural significance of an assemblage of textiles and leather in a particular time and place. This paper examines the cloth culture of the textiles, skin products and braids that wrap and connect an assemblage of metal and precious objects that form the Galloway Hoard. The hoard was buried around 900 CE in the modern county of Dumfries and Galloway, Scotland. To trace the cloth culture of the textiles and braids, we consider their individual object biographies, and their significance when used as layered wrappings of objects in the hoard.

Each of these organic materials had contexts and meanings in early medieval society. The textiles represent the homespun, wool, the more exclusive, linen, and the exotic, silk. A radiocarbon date (670-780 cal AD/CE) is evidence that the wool textile is possibly a century older and was therefore an heirloom with a generational story. The silk compound weave (samite) is a weaving technology from the east, of a type made in Central Asia, Syria, or Egypt. Silk textiles and braid such as these, had long, transformative histories. During their life histories, they passed through many hands, contexts and locations before arriving Galloway, then part of the Anglo-Saxon Northumbria. The yarns and structures used to create the simple weaves of wool and plant fibre demonstrate that these too had specific stories

and heritage. Explored this way, the textiles of the Galloway Hoard provide new insights into the people(s) living in an area of cultural diversity at a time of change and upheaval, and their understandings of and interactions with textiles.

4 **"THEY WILL NEVER BE WANTING FOR SATIN OR SILK OR SENDAL": WOMEN, LABOUR, AND IDENTITY IN VA DUBLIN**

Abstract author(s): Valante, Mary (Appalachian State University)

Abstract format: Oral

Scholars have often referred to the population of Viking-Age Dublin as 'mixed', 'Hiberno-Norse', or 'Hiberno-Scandinavian'. DNA and strontium analyses can provide clues about an individual's ancestry or where they were born, but they cannot tell us how either individuals or communities thought about themselves. But examining more closely the work women did may provide clues. In *Gender and Archaeology*, Roberta Gilchrist argued that women's work and the products of their work have too often been diminished both in historic sources as well as by modern archaeologists. But archaeological and historical sources demonstrate that cloth culture was vital to the urban economy of the Viking-Age, including Dublin and other towns in Ireland. Women's labor, especially when it came to textile work, helped establish and maintain local networks of exchange within Ireland, creating demand for local production of raw materials such as wool and flax. At the same time, women's work was vital to the international trade economy, bringing in silk and other materials from far away and turning those into high-status items that were clearly in demand in Ireland. Looking at division of labor, modes of production, and the preservation of specialized skills, can reveal the ways that gender and socioeconomic status intersected with "Scandinavian-ness" vs "Irish-ness," helping create a community in Viking-Age Dublin that was more complex than the "mixed" identity we're used to thinking about.

5 **A 10TH CENTURY BURIAL IN EASTERN ICELAND PROVIDES NEW INSIGHT INTO VIKING AGE CLOTHING**

Abstract author(s): Vedeler, Marianne (Museum of Cultural History University of Oslo) - Traustadóttir, Ragnheiður (fornleifafræðingur Antikva ehf) - Mannering, Ulla (The National Museum of Denmark)

Abstract format: Oral

A magnificent grave was discovered in Iceland in the summer of 2021 which contained very well preserved textiles. Remnants of clothing combined with dress accessories will give new information on female dressing in the Viking age. The farmstead Fjörður, which dates to the settlement era in Iceland, stands near the coastline of Seyðisfjörður in East Iceland at the roots of the mountain Bjölfur. During the excavation of the farmstead a longhouse and outhouses were revealed that date back to the 10th century. Adjacent to the longhouse stood a weaving room. A landslide destroyed the walls of the longhouse around the year 1100 and forced people to relocate on the farmstead.

A burial site was found 50 metres north of the longhouse. One of the burials revealed a woman's grave with very well preserved textiles. She lay in a deep pit covered with large stones that were placed over her. Earth and turf were added to the grave to form a burial mound. Tephra layers suggest that the burial took place sometime after the year 940 but before the landslide since the landslide lay over the site.

The micro context in the grave is well documented, and it is possible to identify three layers of clothing: an outer garment, a dress and a serk. Two oval brooches with well-preserved straps show that she was dressed in a suspended dress, trimmed with colourful tablet woven bands. Additional grave goods add to the story.

We will give you a short presentation of the elegant woman from Seyðisfjörður.

6 **ICELANDIC MITTENS**

Abstract author(s): Rimstad, Charlotte - Mannering, Ulla (The National Museum of Denmark) - Wallace Walser III, Joe (The National Museum of Iceland) - Mueller, Susanne (Independent researcher)

Abstract format: Oral

Protecting the hands from coldness and wetness has been essential in all prehistoric and historic periods. Due to preservation, the archaeological remains of gloves and mittens are few, but the existing finds still hold important information on everyday life in the past. With a starting point in two Icelandic finds we will shed light upon how especially mittens were produced with different techniques and how they were used and repaired in the Viking Age and Medieval periods in the North. An exceptional pair of child mittens from Heynes, Hvalfjardarsveit in Western Iceland (Djms. 1960-77) are sewn of woven cloth and have recently been dated to the Viking Age. The mitten from the site of Arnheiðarstaðir in Eastern Iceland (Djms. 3405), dated to 1480-1640 is instead made with the needlebinding technique. Other finds from Iceland, Denmark, Norway and Sweden will be included, and they all show different solutions for keeping the hands warm in a time before knitting became the main technique used for handwear.

7 A PUZZLE WITH NO TEMPLATE: REINTERPRETING THE OSEBERG TAPESTRY FRAGMENTS THROUGH THE USE OF INTERACTIVE DIGITAL REASSEMBLY

Abstract author(s): Havgar, Margrethe (Museum of Cultural History University of Oslo) - Gigilashvili, Davit (Norwegian University of Science and Technology) - Vedeler, Marianne (Museum of Cultural History University of Oslo)

Abstract format: Oral

Despite belonging to a well preserved textile collection dated to the Viking Age, the Oseberg tapestry fragments have never been more fragile than they are today. Due to varying degrees of preservation in situ, as well as changes in conservation methods since their extraction in 1904, the motifs on the fragments have also become increasingly difficult to distinguish.

Both past and present research suggest that several of these fragments may originally have been parts of larger tapestry scenes. Though challenging to discern by the naked eye alone, many such scenes have been proposed. However, owing to the faded and fragile nature of some of the fragments, whether or not these have been part of larger scenes has been close to impossible to determine.

The recent advancements in imaging and machine learning techniques provide new solutions for complex problems in virtual reconstruction of cultural heritage. Could modern computer science methods - such as machine-learning based digital interactivity that uses ultra high resolution digital photography, RTI, and hyperspectral imaging - assist in new reconstruction attempts using both mostly faded as well as the more visible tapestry pieces? In this paper, we examine how said methods are currently being employed to explore and possibly reassemble the Oseberg tapestry fragments in a digital space.

8 ACTS OF ART(E)FACTS: THE PSKOV CASE. THE USE OF 3D SOFTWARE TO ANALYSE AND INTERPRET ARCHAEOLOGICAL DRESS FINDS

Abstract author(s): Pallin, Karolina (The Society for Textile Archaeology & Culture Studies - Texark) - Larsson, Anika (The Society for Textile Archaeology & Culture Studies - Texark; Uppsala University) - Lind, Kerstin (Linköping University Dep. of Culture and Society; The Society for Textile Archaeology & Culture Studies - Texark)

Abstract format: Oral

This presentation focuses on a new method for analysing and interpreting fragmentary dress finds. The method, using the fashion industry software CLO3D, was first tested within the dress research program at the Vasa museum in Sweden, with good results. Usually, when interpreting archaeological textile/dress finds, the final work is based on so many choices, assumptions and qualified guesses that it is hard to, in the end, know what is what. Often, the focus is also to conclude the work in one or a few dress models. Especially if the result is recreated physically. In doing so, it is inevitable to lose information along the way. The point of using a digital tool is that we can choose less and instead try (almost) all aspects one needs in both the analysis, interpretation and recreation phases. The tool also leaves open to go back and forth in the research process, an often wanted flexibility.

Viking dress is a field of research quite challenging to navigate. The archaeological finds are fragmentary, and the interest is high. This field would benefit from access to a new method and tool for analysis and interpretation, and several finds might need to be revisited.

In 2019 my colleagues and I had the opportunity to visit The Archaeological Center of Pskov region (Russia). We received a warm welcome and an excellent guided tour of their collection and archaeological sites. One of the more important finds for our research was the dress find in Chamber Grave 3 (excavation IV, 2006). The digital analysis, interpretation and reconstructions attempts made here are based primarily on our photos and data collected.

This lecture is part of a comprehensive international research project entitled ACTS OF ART(e)FACTS. Additional partial studies within the project are presented in sessions #498 and #601, respectively.

9 FROM TEETH TO TEXTILES - BIOMOLECULAR IDENTIFICATIONS OF OVICAPRINE REMAINS FROM LATE IRON AGE AND VIKING AGE SOUTHERN SCANDINAVIA

Abstract author(s): Jæger, Jonas (Centre for Textile Research, SAXO-Institute, Faculty of Humanities, University of Copenhagen; Section for GeoBiology, GLOBE-Institute, Faculty of Health and Medical Sciences, University of Copenhagen)

Abstract format: Oral

The Late Iron Age and Viking Age of Southern Scandinavia saw a large demand for wool textiles. In addition changes in wool quality indicates the introduction of new sheep breeds or novel sheep husbandry strategies. However, the difficulties of morphologically distinguishing sheep and goat remains complicates species-specific research into ovicaprine husbandry.

Here, ZooMS (Zooarchaeology by Mass Spectrometry), a biomolecular method for species identification, is applied to 35 mandibles and teeth previously identified to species on the basis of osteomorphology. The results from the analysis show discrepancies between morphological and biomolecular species identifications which may have implications for our interpretation of species-specific exploitation patterns and thus our understanding of the production of wool during the Late Iron Age and Viking Age in Southern Scandinavia.

The results from the ZooMS analysis can furthermore provide the basis for additional zooarchaeological and biomolecular investigations into sheep husbandry practices and help answer questions regarding topics such as selective breeding or flock sex composition.

697 SO DIFFERENT, YET SO SIMILAR: BIOCULTURAL IDENTITY AND PLURALITY IN THE MEDIEVAL AND POST-MEDIEVAL WORLD

Session theme: 6. Contested Pasts & Presents

Session organisers: Diana, Annamaria (Terra Ultra Silvam Archaeology) - Marcu Istrate, Daniela (Institutul de Arheologie Vasile Parvan) - Toso, Alice (Bonn Center for ArchaeoSciences - BoCAS, Institut für Archäologie und Kulturanthropologie, Rheinische Friedrich-Wilhelms-Universität)

Session format: Regular session

The concept of 'identity' in areas of highly concentrated cultural, religious, genetic and linguistic admixture, in addition to research pathways towards a better understanding of the processes leading to biocultural diversity, are the main focus of this interdisciplinary session.

We would like to discuss and present case studies that assess the fascinating phenomenon of identity formation in the medieval and post-medieval period through the observation of both conflicting and balancing forces and their interpretation in the archaeological context. We also wish to analyse and discuss how cultural affinity and the sense of 'belonging' are expressed by groups or individual members of past and present populations. We seek to bring together scholars and professionals who have explored and identified trends and new perspectives in this field of study through traditional and ground-breaking approaches.

The Carpathian Basin and the Balkans are a prime example of large geographical areas that have been deeply shaped by the coexistence of diverse religious, ethnic, and cultural groups throughout their history. The legacy of these populations reverberates in the architecture, material cultures, rituality, food practices as well as customs and traditions observable today.

We welcome contributions exploring (but not limited to):

- Processes of identity formation as a result of migration, colonisation and other forms of population mobility;
- The identification and reconstruction of biocultural diversity through a multi- and cross-disciplinary approach;
- Non-linear power dynamics and dependencies between cultural groups.

ABSTRACTS

1 EXPLORING FOOD, CULTURE AND IDENTITY IN EARLY MODERN IRELAND (C. AD 1550-1650): A MULTI-ISOTOPE APPROACH

Abstract author(s): Rose, Alice - Montgomery, Janet - Gröcke, Darren (Durham University) - Flavin, Susan (Trinity College Dublin)

Abstract format: Oral

The Early Modern period in Ireland (c. AD 1550-1650) was a time of economic development and intercultural contact but also of conflict and colonisation. Through the integration of archaeological and historical evidence, the interdisciplinary 'FoodCult' project aims to study the role of food in the demonstration and negotiation of authority and power in Ireland in the 16th and 17th centuries, how 'national' food cultures were developed and expressed and how various social factors influenced food and drink consumption.

This paper presents results from multi-tissue, multi-isotope analysis ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, $\delta^{34}\text{S}$, $\delta^{18}\text{O}$, $87\text{Sr}/86\text{Sr}$) of c.130 Early Modern individuals excavated from 13 archaeological sites across Ireland, generated as part of the 'FoodCult' project. These individuals were carefully chosen to reflect the social and cultural complexity of Ireland in this period. The sites include examples of urban and rural attritional burial assemblages, as well as burials associated with specific episodes of warfare. The individuals studied include the native Irish; the so-called 'Old English', who were Gaelicised settlers from a wave of 12th century colonisation, and 'New English' Protestant colonists who arrived from the sixteenth century. These groups, who include men, women and children represent complex, entangled and competing identities in Irish society.

Isotopic analysis of this archaeological skeletal material has allowed for information relating to diet to be generated on an individual and population scale. The isotopic evidence allows for exploration of the consumption of food in these diverse communities in relation to aspects such as social class, gender, religion, warfare and migration. When integrated within an interdisciplinary framework, the results can be used to discuss the social and cultural meaning of food in these different contexts and to test assumptions regarding the expression of identity through food in Early Modern Ireland.

2 **ARCHAEOGENETICS AND THE SOCIAL DYNAMICS OF ANCESTRY AND IDENTITY IN VANDAL AND BYZANTINE CARTHAGE, TUNISIA**

Abstract author(s): Morgan, Reed (Harvard University, History Department; Max Planck Institute for Evolutionary Anthropology, Department of Archaeogenetics) - Chalhouni, Najd - Ben Romdhane, Hamden (Institut National du Patrimoine Tunisie) - Bockmann, Ralf (University of Hamburg) - Ringbauer, Harald - Krause, Johannes (Max Planck Institute for Evolutionary Anthropology, Department of Archaeogenetics)

Abstract format: Oral

The early medieval history of Carthage saw the western Mediterranean's second largest city change hands numerous times, between Vandals, Byzantines, and ultimately Arabs. Up to the time of its destruction, it remained a vital port at the centre of Mediterranean trade routes, and historical sources portray it as a vivid hub of cosmopolitan activity. Carthage was a crucible of encounter for a wide array of cultural, linguistic, and religious groups: Romans, Vandals, Berbers, and Eastern Mediterranean populations; Latin speakers, Greek speakers, and speakers of indigenous North African languages; Orthodox, Donatist, and Arian Christians. Up until now, North Africa has remained a major lacuna on the map of ancient DNA research, and bioarchaeological research more generally. Here, a new collaboration between historians, archaeologists, and archaeogeneticists aims to examine biological ancestry and kinship patterns in light of our current understanding of social identities in the early medieval city. We present new archaeogenetic results from more than 150 fifth- to seventh-century burials, representing a wide range of social identities from around the city, including extramural cemeteries, intramural cemeteries, elaborate basilicas, and isolated burials. This paper will present a first attempt to integrate the new genetic insights into migration, ancestry, demography, and kinship in early medieval Carthage together with the longstanding historiography of identity formation in post-Roman North Africa.

3 **IDENTITY FORMATION IN EARLY MEDIEVAL NUBIA: PRELIMINARY REMARKS FROM MULTIDISCIPLINARY INVESTIGATION OF FUNERARY CONTEXTS**

Abstract author(s): Ciesielska, Joanna (Faculty of Oriental Studies & Institute for Advanced Studies, University of Warsaw)

Abstract format: Oral

The populations of early medieval Nubia (modern Sudan) were likely formed of groups of various ethnic origins, cultural practices, and economic strategies, together comprising a complex and heterogeneous society. Over the preceding Post-Meroitic period the valley has been gradually infiltrated by the Nobades and other sub-Saharan tribes dwelling in the western deserts, mixing in with the descendants of Meroites settling the alluvial plains. In the sixth century Nubia entered the phase of important socio-cultural transformation associated with the adoption of Christian faith, which coincided with the formation of centralised states. This resulted in gradual reformulation of social networks and possibly a redefinition of one's identity along the lines of new social determinates. While religion was not initially a part of individual's explicit identity claims, the changes in mortuary realm reflect a progressive turn towards the homogenization in the spiritual realm. Meanwhile, archaeological record shows dynamic demographic networks with high degree of residential mobility. Isotopic research reveals the significance of the fluid boundary between sedentism and mobility, agriculture and pastoralism, based on mixed subsistence strategies highly dependent on changing ecological and economic circumstances. Bioarchaeological investigation of Early Medieval funerary sites explores thus the association between ethno-cultural heterogeneity and specific lifeways by the assessment of the scale of paleomobility and ecological complementarity.

4 CONTINUITY AND DISCONTINUITY DURING THE MIGRATION PERIOD FROM THE KESZTHELY-FENÉKPUSZTA FORTRESS PERSPECTIVE

Abstract author(s): Traverso, Luca (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology) - Bollók, Ádám (Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network) - Gneccchi Ruscone, Guido (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology) - Koncz, István (Institute of Archaeological Sciences, Eötvös Loránd University; Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network) - Knipper, Corina (Curt-Engelhorn-Center Archaeometry gGmbH) - Pohl, Walter (Institute for Medieval Research, Austrian Academy of Sciences; Department of History, University of Vienna) - Geary, Patrick (Institute for Advanced Study, Princeton) - Krause, Johannes (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology) - Vida, Tivadar (Institute of Archaeological Sciences, Eötvös Loránd University; Institute of Archaeology, Research Centre for the Humanities, Eötvös Loránd Research Network) - Hofmanová, Zuzana (Department of Archaeogenetics, Max Planck Institute for Evolutionary Anthropology; Department of Archaeology and Museology, Faculty of Arts, Masaryk University)

Abstract format: Oral

For the Carpathian Basin, the Early Middle Ages represented a period of intense human mobility across the region, reflected in the complexity of the archaeological findings dated to that time. The Keszthely-Fenékpuszta site with its seven cemeteries dated between the 4th and the 7th centuries provides unique insights into the historical developments of this turbulent epoch. The site's late Roman fortress, continuously inhabited by a mixture of local and newcomers throughout the Hun, Langobard, and early Avar periods, retained its importance until the mid-7th century.

Here, we analysed cemeteries from the 5th-7th century, employing newly generated genome-wide ancient DNA, archaeological finds and C, N and Sr isotopes data. Thanks to the entire-cemetery sampling approach with a combination of different methods employed in the frame of the HistoGenes ERC project, genomic diversity was co-analysed with isotopes, grave goods and other archaeological analyses on the specific and broader scale.

Since the 1960s, the identity of the people buried in Keszthely has been lively debated, especially the Early Avar period burials with lavish Merovingian and Early Byzantine grave goods (so-called Keszthely Culture). From the analysis of more than 130 individuals, we extrapolated the differences between the cemeteries and tackled some of these questions.

Through the study of the genomic structure of the population integrated with a detailed analysis of the isotope data, we investigated the apparently continuous inhabitation of the fortress, which was in contrast to the partial discontinuity in material culture, and tested the hypothesis of a re-population of the fortress during the 7th century.

This approach allowed a further insight into the social structure, tracing a process of continuous restructuring of elite groups of different origins that were buried here. The results also shed some light on the role of biological relatedness during the Migration Period.

5 COMBINING OSTEOARCHAEOLOGICAL AND ISOTOPIC DATA: PRELIMINARY RESULTS FROM THE MEDIEVAL CEMETERY OF BRAȘOV (TRANSYLVANIA, ROMANIA)

Abstract author(s): Toso, Alice (Bonn Center for ArchaeoSciences - BoCAS, Institut für Archäologie und Kultur-anthropologie, Rheinische Friedrich-Wilhelms-Universität) - Diana, Annamaria (Terra Ultra Silvam Archaeology) - Marcu Istrate, Daniela (Institutul de Arheologie Vasile Parvan)

Abstract format: Oral

The historical region of Transylvania (Romania), is an area of conflicted interests and overlapping communities, cultures and traditions, still poorly understood both historically and archaeologically.

This pilot study, developed from the broader Brașov Bioarchaeology Project, presents the results of isotopic and bioarchaeological analyses conducted on a group of skeletons from the Brașov medieval cemetery. In the 12th century, Brașov, like other Transylvanian centres, was colonised by Saxon communities, invited by the Hungarian rulers. While the Saxons have left abundant written documentation and vestigial structures, little is known about the local populations, who were obviously displaced and pushed away from the central urban areas.

A randomly selected sample of 50 adult skeletons was analysed osteologically. Isotopic analysis of $\delta^{13}\text{C}$, $\delta^{15}\text{N}$ and $\delta^{34}\text{S}$ were carried out on the same group as well as 10 contemporaneous faunal samples with the aim to explore 1) dietary practices in the population of Brașov during the Middle Ages; 2) the potential overlap of pathological cases with isotopic signals that deviate from the norm of the population 3) the impact of mobility on the local subsistence strategies and the presence of non-locals in the assemblage.

By integrating osteoarchaeological information from each skeleton with isotopic values from their bones and from the local fauna, we have been able to identify and better understand population affinity and diversity based on age- and

biological sex- related dietary, pathological, and developmental patterns. Archaeological interpretation of this large cemetery, amounting to over 1,400 burial contexts, is yet to be carried out, and analyses must be extended to a much larger number of skeletons to build a more scientifically grounded picture. Despite those limitations, our research shows that new advances in bioarchaeology and isotopic analysis can significantly contribute to the study of this multi-faceted, multicultural region in the heart of the Carpathians.

6 SZEKLER-HUNGARIAN PERSISTENCE AMONG CHANGE IN THE CARPATHIAN BASIN: A CASE STUDY FROM THE PAPDOMB SITE (AD 1100- 1800), VĂLENI ROMANIA

Abstract author(s): Zejdlik, Katie (Western Carolina University) - Nyárádi, Zsolt (Haáz Rezső Múzeum, Odorheiu Secuiesc, Romania) - Bethard, Jonathan (University of South Florida)

Abstract format: Oral

Szekler-Hungarians are a specific cultural expression embedded within the larger Hungarian identity. Current understanding is that the Szeklers arrived in the Carpathian Basin in the 12-13th century to defend the eastern border for the Kingdom of Hungary. Archaeological and genetic evidence supports a continued and stable Szekler presence in this socially tumultuous context of Transylvania with their descendants still present there today. Excavation of the Papdomb site, a rural church and mortuary landscape in Harghita, County, Romania and just outside Odorheiu Secuiesc (Székelyudvarhely), referred to as the “Seat of the Szeklers” demonstrates this continuity. Since 2014, 864 human interments ranging in date from approximately 1100calAD to the 18th century show consistency in type and frequency of grave offerings, body orientation and position, and communal use of mortuary space within this rural context. This presentation provides a macro-scale overview of the site within the larger timeline of the Hungarian presence in the Carpathian Basin, a broad discussion of the impact rural communities have on stasis amidst larger social change, architectural evidence of political and religious impacts, and finally, 800 years of consistent approaches to human interment all of which demonstrates that despite the upheaval around them, the Szeklers were steadfast in the cultural practices that they could control, reaffirming their identity and claims to the landscape over time.

7 CONTENDING IDENTITIES IN A COLONIAL CONTEXT: A COMPARATIVE ANALYSIS OF POPULATION MOVEMENT ON THE EUROPEAN AND NORTH AMERICAN CONTINENTS

Abstract author(s): Bianco, Elizabeth (CUNY Hunter College) - Diana, Annamaria (Terra Ultra Silvam Archaeology)

Abstract format: Oral

The colonisation of unexplored areas or the occupation of pre-inhabited territories functioned as the primary mode of population movement for millennia. As a consequence of this process, the geo-political boundaries of regions were redrawn, local resources were seized, and the socio-cultural identities of communities and populations at large were altered indelibly. In addition to these general trends in colonisation, the integration of outside populations into established communities bore unique ramifications for each settlement colonised. During the Middle Ages, a period characterized by the expansion and dissolution of chiefdoms, kingdoms, and empires as competing powers struggled to establish themselves as unified entities, the displacement, and relocation of groups of people was a common practice.

By collecting archaeological and historical evidence, our contribution aims to compare and contrast identity formation and retention of plurality in American sites of colonial origin and in the emblematic case of the Carpathian Basin in Europe. Our discussion will be guided by the following questions:

- Can the arrival of settlers in an area with a pre-existing population ever be peaceful?
- What, if any, are the consequences of past population movements and the foundation of colonies today in the compared areas?
- What is the best methodology for examining archaeological sites and remains from problematic, culturally disputed areas of the colonial past?

Whether a new settlement is formed peacefully through the means of a systematic, organised process, or, on the contrary, in the form of a violent imposition on local autochthonous populations, cultural tension is an inevitable effect of colonization. Recently anthropological and archaeological research has moved towards redefining forgotten pluralities and voicing the narratives of groups whose identity was stifled or nullified by dominating socio-political forces; with this contribution, we would like to discuss current views and future research paths on this subject in archaeology.

A. ARTIFICIAL CRANIAL DEFORMATIONS AS THE MANIFESTATION OF CULTURAL AND/OR SOCIAL IDENTITY AT THE SITE OF ČATAJ (SLOVAKIA)

Abstract author(s): Krošláková, Mária - Jakab, Július - Hukelova, Zuzana (Institute of Archaeology, Slovak Academy of Sciences)

Abstract format: Poster

Artificial cranial deformation, or modification, is the intentional alteration of human skulls from early childhood, using binding cloth or binding between two pieces of wood, for example. Artificial cranial deformation has occurred in many historical cultures through the ages, separated geographically, and is still in practice in some areas and communities in the world.

Artificial cranial deformation can therefore represent manifestation not only of ethnicity but also of social status and/or spiritual beliefs. Intentionally modified skulls could also indicate wisdom or just trends(?) in beauty.

There is a peak of this trend among the populations in Europe in the late Migration period (5th century AD), presumably thanks to the movement of the Huns across the continent. Two out of 17 individuals from the archaeological site of Čataj - Zemanské Gejzové (Slovakia), also manifested artificially deformed skulls, probably using the two-bandage cranial binding technique, possibly implying their cultural or social difference.

699 STONE, BRICK AND MORTAR: ARCHITECTURE OF THE EARLY MEDIEVAL PERIOD IN THE BALKANS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Hoxha, Zana (Institute of Albanology in Prishtina) - Fabijanić, Tomislav - Baraka Perica, Josipa (University of Zadar) - Rama, Zana (Archaeological Institute of Kosovo)

Session format: Regular session

The session “stone, brick and mortar” focuses on the architecture of the early medieval period (5th-10th centuries) in the Balkans. During this period, we notice a blooming of architecture in both sacral and secular buildings throughout the Balkans. Moreover, castles on high peaks were being reconstructed and reused. Additionally, the building program of Emperor Justinian, a program characterised by large-scale investments, left us with some unique examples of architecture. Through the remains of stone, brick, and mortar, and evidence of building techniques, we understand the ups and downs of the empire in the region. Therefore, this session welcomes researchers from the Balkans and abroad that are working towards understanding the architecture of this period by mapping, archaeological excavation, or any other scientific methods. Also, as a result of this session, we aim to comprehend typologies of sacral and secular buildings and how different universal designs adapted to local conditions. We are delighted to accept papers on a date range from the beginning of the 5th century up to the 10th century. Different approaches in this session will complete a missing general overview of the early medieval architecture of the Balkans.

ABSTRACTS

1 SOME CONSIDERATIONS ABOUT VILLAGE LIFE IN LATE ROMAN RURAL DALMATIA: THE CASE OF RIVINE – CRKVINA SITE

Abstract author(s): Baraka Perica, Josipa - Uglešić, Ante (University of Zadar)

Abstract format: Oral

Village life in late Roman rural Dalmatia flourished, but it is still an insufficiently studied topic that holds great potential. Archaeological research confirms that the most common rural archaeological sites in this period are churches. The dominance of churches as late antique rural sites is closely related to the long tradition and success of early Christian archaeology in our region, mostly due to the importance of the capital Salona. Even if in addition to churches there are also numerous other kinds of sites they are mostly mentioned in the literature as isolated individual sites, and only rarely presented in context.

With the intention of expanding the research from the churches to the wider area, as it has already been done for the site of Doci bazilika, on this occasion we would like to present the archaeological image of the site of Rivine – Crkvina, a late antique site situated in the vicinity of the town of Stolac in Bosnia and Herzegovina. The relationship of the Early Christian church and the production facility is a special characteristic of this site that has proven to be unique for the Roman province of Dalmatia.

The site is located on an elevated position on the north-eastern edge of a larger field. The church and the production facility next to it were probably a part of a much larger settlement that might have encompassed the unexplored architecture located in the immediate vicinity.

The aim of the lecture proposal is to present the architecture of this exceptional site but also to extend the scholarly interest to the entire nearby landscape, and the selected sites, in order to obtain a much larger picture about village organisation, and also to compare it with some other similar sites in Dalmatia, especially in its hinterland.

2 THESSALONIKI: ARCHITECTURAL TRACES OF SECULAR AND RELIGIOUS LIFE OF THE EARLY BYZANTINE CITY

Abstract author(s): Iosifidis, Theodoros (Aristotle University of Thessaloniki)

Abstract format: Oral

Thessaloniki was always a city and the second largest one of the Eastern Roman Empire, hidden behind the glory of the capital. Thessaloniki was also a capital; it was the tetrarchic capital of Galerius, after the division of the Roman Empire, imposed by Diocletian. Galerius built his large palatial complex, traces of which dominate even the modern urban tissue of the city. Another dominant feature in modern city is the so called "Roman Agora" which remained a big and important public space during the first byzantine centuries, maintaining some of its earlier functions. Thessaloniki was also equipped with a port, through which access to the Aegean Sea was achieved, rendering it an important military base and commercial arrêt obligatoire of the peninsula. Apart from the secular life, Thessaloniki presents numerous examples of religious architectural remains. Saint Demetrios, the patron saint, and his basilica famous for the healing miracles constituted one of the major pilgrimage sites of the Balkans. The cathedral of the city was the five aisled basilica of Saint Sophia and for a period of time Panagia Acheiropoiitos. These parish churches were the glorious expression of religious architecture, however traces of smaller and less important churches, sometimes charged with different functions, can be detected in multiple areas of the city map. Lastly, in this paper, the traces of private life will not be excluded. Houses and mansions will be studied and conclusions will be drawn about the factors that shaped the image of Early Byzantine Thessaloniki.

3 STONE, SOME BRICKS AND LESS MORTAR: CONSIDERATIONS ON CHANGES IN ARCHITECTURE IN LATE-ANTIQUITY AND POST-ROMAN DALMATIA

Abstract author(s): Fabijanic, Tomislav (University of Zadar)

Abstract format: Oral

Many elements of Antique and late Antique civilisation and culture in general are proved to be very resilient to changes. However, some of them, particularly those related to architecture and construction, have inevitably been transformed due to new realities in post-Roman period. This contribution aims to explore different examples of transformations of Antique buildings in late antiquity and especially in the early Middle Ages, reusing of construction material as well as introduction of new architectural and urbanistic elements needed to deal with emerging perils. Some of these are well known and documented (e. g. auxiliary fortification walls in Iader and Asseria), and some are only mentioned in scientific literature without in-depth analyses (for example, early medieval drywalls built within Antique buildings in Aenona). Although the contribution will primarily be focused on Dalmatian coastal area and its hinterland, some examples of early medieval dwellings in Peri-Pannonian area will also be examined.

4 LATE ROMAN FORTIFICATION IN TOWN OF HVAR CROATIA

Abstract author(s): Viskovic, Eduard (Kantharos d.o.o.)

Abstract format: Oral

True development of the settlement begins in late antiquity. All archaeological excavations in the town of Hvar have found the remains of a late antique city. This is happening because in late antiquity trading routes are transferring from dangerous land routes to the more secure sea routes. Trade was well developed in the late 4th and early 5th century, although the Western Roman Empire was nearing its end. However, though the Western Roman Empire was in decline, eastern Adriatic coast showed progress in economic and demographic sense, as illustrated by Hvar and some other Adriatic settlements that flourished in Late Antiquity. Late 5th and the first half of the 6th century were marked by dramatic military and political events in Dalmatia. The final fall of the Western Roman Empire was ensued by short-lasting rule of the Ostrogoths who were defeated by the Emperor Justinian. Crucial battles happened exactly in Salona where both opposing sides had their strongholds. Salona was a regional center whose catchment area also encompassed Hvar. Late antique fort around big port structures in Hvar was erected in this period. Every building enterprise of this scope suggests highly organized management structure in a settlement, and possibly also a state intervention during Justinian's Reconquista. Late antique fort was found by archeological research in the Arsenal area, and lately in front of the Radosevic palace where archaeologist found eastern part of the Late Roman fortification. Eastern wall of late antique fortification with a door was dated to the late 5th century by radiocarbon analysis of the charcoal from mortar. It is unknown whether the defensive walls played any role in the defense of the city, which for some reason was largely abandoned during the early Middle Ages.

5 THE LATE ANTIQUE FORTIFICATION SYSTEM ALONG THE ROAD LISSUS-NAISSUS

Abstract author(s): Rama, Zana (Archaeological Institute of Kosovo)

Abstract format: Oral

The Province of Dardania, the central territory of which lies in today's Kosovo, as many other parts of the Byzantine Empire, was endangered by the tribe invasions such as: the Avars, Huns, Goths, Slavs, etc. during the Late Antique Period. This led to the re-organization, construction and re-construction of the fortification system. It started with the building of castrums in the 4th century and reaches its peak of development during the rule of the Emperor Justinian I, with the building of a dense fortification network. These series of constructions were carried out after a powerful earthquake hit the region in 518, by destroying 24 fortifications only in Dardania. According to the scholar Procopius of Caesarea in his writings "De Aedificiis" (On buildings), during the rule of the emperor Justinian I, only in Dardania 69 fortifications were built from which 61 were reconstructed and 8 were constructed. Fortresses were built in strategic areas, with dominant position, along important roads, close to important towns and mining areas. During the Late Antiquity the road Lissus-Naissus, which was the main road crossing through Dardania, by linking the central Balkans with the Adriatic Coast, had around 40 fortified centers, including road stations and checkpoints, some of which are mentioned also in the Tabula Peutingeriana. This paper will present the role of the road Lissus - Naissus, the organization of the fortification system, their typology and their architectural characteristics.

6 EARLY CHRISTIAN CHURCHES AS PART OF THE COMPLEX OF LATE ANTIQUITY FORTRESSES IN KOSOVO

Abstract author(s): Hoxha, Zana (Institute of Albanology)

Abstract format: Oral

Today's territory of Kosovo was inhabited by one of the largest Illyrian tribes, the Dardanians. The Roman Province of Dardania was established as a self-administrated province in 297 AD within the frame of the Roman Empire by Emperor Diocletian. The geographic characteristic of Kosovo consists of the mountains of Karradak, Sharr, and Cursed Mountains and stretches on two plateaus: the Plateau of Kosovo and Dukagjini. This diverse geography allowed the local population to inhabit both fields and mountains. A very important characteristic of the period is that the population moved to high altitudes due to continuous attacks by Goths, Huns, Avars, and Slavs. Thus, a huge investment was made in the reuse of prehistoric fortresses, but now with innovation, on the highest peak of the fortress a church was built. Moreover, Emperor Justinian with his big project in Dardania, besides his investments in new cities, built eight new fortresses and rebuilt sixty-one. Although more than one hundred castles have been identified until today, only a few of them have been excavated. Out of the fortresses that have been excavated six of them on the highest peak of the citadel hold an early Christian church. The typology of these churches varies in typology. This paper will elaborate on the early Christian architecture of the Castle of Harilaq, Kasterc, Korisha, Vuqak, Keqekolla, and Syrigana. Through this analysis, we can understand more about the social aspect of these churches, as some examples lead us to believe that they were serving beyond their basic functions, as places of pilgrimage. Concluding, these churches play a key role in understanding the complete situation of the Early Christian Architecture of the territory of Kosovo.

701 TERRACOTTA FIGURINES AS RANDOM OR DELIBERATE OFFERINGS. A COMPLEX CONTEXT REVISITED

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Spathi, Maria (Harvard's Center for Hellenic Studies) - Wallensten, Jenny (Swedish Institute at Athens) - Chidiroglou, Maria (Curator, National Archaeological Museum, Athens)

Session format: Regular session

One of the most popular types of offerings in ancient Greek sanctuaries are terracotta figurines. And while other finds from sanctuaries, such as ceramics, often had, together with possible cultic and religious uses, a practical function, figurines are believed to have had mainly symbolic properties. Terracotta statuettes from sanctuaries can therefore offer, under certain conditions, valuable evidence about the worshipped deity, his/her attributes, ritual practices as well as information regarding the worshippers themselves and their motivations for offerings of specific coroplastic types. In addition to the questions of dating, typology and manufacture, the following questions regarding the coroplastic products are still pertinent to this day:

1. should the anthropomorphic figurines be seen as representing the deities worshipped in a certain location or do they symbolically depict the dedicant?
2. What does the act of deposition 'mean' and what symbolism(s) may have attended it or underscored its purpose?

These questions are certainly not new, but still merit discussion, as figurines continue to surface in excavations and enrich an already vast material. They will provide an overarching background to the discussion of this session, which

will investigate if the choice of specific figurine types is influenced by random factors or if it is deliberate and related to the worshipped deity. More specifically, the following questions will be approached:

- a. Does a set of figurines characterize the worship in a sanctuary or not?
- b. Does a coroplastic assemblage from a sanctuary portray the attributes, qualities and cultic practices of a worshipped deity or not?
- c. If the figurines can be seen as characteristic for worship and/or worshipped deity, to what extent and why?

This session will thus provide a multifaceted exploration of types and meanings of Greek terracotta figurines in connection to specific cult sites in Greece and the eastern Mediterranean.

ABSTRACTS

1 COLUMNAR FIGURINES FROM EARLY IRON AGE RITUAL SITES AND EARLY ARCHAIC SANCTUARIES IN LACONIA

Abstract author(s): Fragkopoulou, Florentia (Acropolis Museum, Athens, Scientific Collaborator)

Abstract format: Oral

Clay columnar figurines which seem to span the end of the 8th and mid-7th centuries from sites where ritual (not yet cultic) enactments are attested both in the area occupied later by the Spartan polis and the wider region of Laconia have not attracted the attention they deserve by modern scholars. This paper seeks to fill in this lacuna by examining the common characteristics of this figurine type and their LH IIIC predecessors across Laconia. The material discussed comes primarily from Artemis Orthia and Geraki (ancient Geronthrai), which are not transformed into cult sites before the Late Geometric and late Archaic times respectively. Columnar figurines from these two very popular (within the so-called Spartan studies) sites are then compared with similar figurines from the famous Amyklaion, a clearly cultic site since its establishment in the LH times. The aim is double. First, to show that the 'trend' of employing columnar clay figurines at sites where ritual activity is attested since the post-palatial era across Laconia follows contemporary developments known from elsewhere in Greece. Second, to emphasise that these figurines are equally encountered at sites where both male and female deities are identified from the second half of the 7th century in the whole of Laconia. In this way, the significance of gradual ritual transformations, which reflect populations' consolidation within Laconia over time, and how these changes affect celebrants' preferences over the use of specific figurine types for ritual purposes, are brought to the fore as decisive factors in shaping worshipping behaviour in the particular region roughly from LH IIIC to the early Archaic period.

2 THE ATHANA LINDIA SANCTUARY IN RHODES: A DISCUSSION ON THE VOTIVE TERRACOTTA FIGURINES

Abstract author(s): Hoffmann, Sanne (The Danish Institute at Athens)

Abstract format: Oral

The paper will present an overview of the different figurine types discovered in the Athana Lindia sanctuary in Rhodes, Greece. More than 2740 Greek votive terracottas were found and are dated between the Geometric period and 330 BC.

The terracotta types and their attributes will be discussed in order to establish if they could be used as identification markers for the specific cult and/or the use of the cult. The argument will be substantiated by a survey of the presence of selected types in a variety of goddess sanctuaries.

Finally, the terracotta figurines will be considered in relation to other find groups from the sanctuary, such as the Cypriote limestone figurines, the Egyptian amulets, and the large amounts of fibula.

The paper aims at contributing to further the understanding the cultic references in votive terracotta figurines, the cultic interactions in ancient Greek sanctuaries, and the concept of votive offerings in general.

3 MUSIC FOR THE GODDESS?

Abstract author(s): Kolotourou, Katerina (Independent researcher)

Abstract format: Oral

Music for the goddess

As one of the most prevalent components of ritual, musical performances are regularly represented on artefacts of various media (vases, seals, metalwork, miniature votive instruments) that are deposited at early Greek sanctuaries from the turn of the first millennium BC on. These representations can be understood as material expressions of the complex performative dynamics in the context of the respective cults. By contrast, terracotta figurines of musicians

are not only rare in early Greek sanctuary deposits, but they also make a remarkably late debut in the 8th century BC, with a unique example of a frame drum player from the Heraion at Samos, which is only followed up in the 7th/6th century BC by dedications of terracotta musicians of Cypriote style at the same sanctuary, and a few more isolated examples at the sanctuaries of Hera at Argos and of Athena Lindia at Rhodes. This paper will consider the reasons for the scarcity of this particular iconographic type from early Greek cultic contexts, in the light of its great popularity in Cyprus and the Eastern Mediterranean, and will also examine the reasons propelling its first appearance in connection with the cult of Hera at Samos.

6 TERRACOTTA FIGURINES FROM SANCTUARIES IN THE NATIONAL ARCHAEOLOGICAL MUSEUM, IN ATHENS. AN OVERVIEW OF DEDICATORY PRACTICES, PER TYPE(S) AND CONTEXT(S)

Abstract author(s): Chidioglou, Maria (National Archaeological Museum, Athens)

Abstract format: Oral

A number of Greek terracotta figurines of Archaic to Hellenistic times, found in various sanctuaries and cultic sites in Greece, are housed in the National Archaeological Museum in Athens. They come from systematic or salvage excavations undertaken in the late 19th and early 20th centuries, in Attica, Boeotia, such as the Kabeirion at Thebes, the Peloponnese, such as the Heraia at Argos and Perachora, Corfu, such as the small Artemis sanctuary there, and other regions. In this assemblage are contained figurines of deities, such as of Artemis, female and child figures, dancers, actors and terracotta complexes.

This paper aims at an overview of a number of representative Greek votive terracotta figurine types from the Collections of the National Archaeological Museum. More specifically, coroplastic types of deities and mortal female, male and child figures, as well as contexts of excavated sanctuary assemblages will be investigated, together with comparanda from modern research and more recent excavations. Archival data on the finds will be supplied, together with relevant literary and inscriptional sources or other information, where available.

A brief, albeit analytical, presentation of this type of find-assemblages will help us investigate as to what extent a set of similar terracotta figurines may or may not characterize the worship of a deity or deities in a given sanctuary, whether a coroplastic assemblage from a sanctuary may or may not portray the attributes, qualities and cultic practices of the worshipped deity or deities, and if it does, the reason or reasons why.

In this paper we will therefore examine if the deposition of standard or gradually standardized coroplastic types in various sanctuaries can be considered as a random, generic, votive choice, or seen as a part of deliberate, diachronic or periodically specific votive practices of the dedicants, closely related to the worshipped deity or deities.

7 TERRACOTTA FIGURINES FROM SANCTUARIES OF DEMETER: VOTIVE OFFERINGS WITH A PURPOSE

Abstract author(s): Spathi, Maria (Center for Hellenic Studies, Harvard University)

Abstract format: Oral

A set of terracotta figurines from a sacred context can constitute a group with specific meaning. And while individual figurines from sanctuaries may be considered as indicative of personal expressions by the dedicants, a coherent and repeated set reflects a collective and recurring practice, made by groups of individuals in a period of time. This type of sets of figurines may provide reliable indications of the character and attributes of the worshipped deity.

The majority of the finds, and especially the terracotta figurines, that have been unearthed in sanctuaries of Demeter are finds one expects to see in sanctuaries of the goddess. They have proven to be very helpful for the identification of the worshipped deity, even in cases where the literary and epigraphical evidence are missing. In most sanctuaries of Demeter, there have come to light figurines of *hydriaphoroi*, together with figurines of women holding a piglet, of *kourotrophoi*, usually found together with figurines of children, of young women with symbolic objects or attributes related to fertility and sexuality, of *Baubo*, *protomes* and figurines of young men. They are usually found together with other characteristic finds, such as miniature clay *hydrias* and *kernoi*.

All the above figurines form a relatively homogenous set and, from the 5th century BC onwards, they are characteristic finds of the worship of Demeter, as evidenced by assemblages from South Italy, Sicily, Ionia and the Greek mainland. They constitute conscious votive choices made by visitors to the sanctuary. The sanctuaries of Demeter are therefore, in many cases, similar to each other in terms of the types of votive offerings and cultic practices. These offerings repeat or echo traits of the basic persona of the goddess revealed in the *Thesmophoria* festivals, namely as one concerned with female and animal fertility and the productivity of the land.

Abstract author(s): Ammerman, Rebecca (Colgate University)

Abstract format: Oral

To what extent can the intentionality of a worshipper be inferred from a terracotta dedicated at a sanctuary? Intriguing answers are provided by 1800 terracottas recovered from the spring sanctuary at Pantanello in the chora of Metapontion. Plaques molded in low relief provide insights to the practice of cult in the fourth century BCE due to their rich, pictorial narratives. Two groups stand out. Most numerous are reliefs depicting a dancing female figure in the company of Pan or Silenos within a grotto. Reliefs portraying a reclining banqueter accompanied by a female figure and male infant are likewise plentiful.

My interpretation of the dancing female as a Nymph, whose waters formed the focus of rites enacted by the rural population, points to a specificity of intent by the craftsmen who fashioned the plaques (unique to Metapontine workshops) as well as by worshippers who dedicated the plaques at the spring's source. The plaques reflect literary portraits of Nymphs and offer a mythic analogue for the mortal nymph, who sought to ensure her own fertility by the requisite prenuptial bath in the waters of the divine Nymph. The banqueter plaques enjoyed a long history among Greek poleis on the Ionian coast of Italy. Interpretations of this imagery are as wide-ranging as the number of sanctuaries where the plaques were dedicated. Did such a terracotta thus serve as an "all-purpose" gift? While assigning identities to the figures of what appears to be a family portrait is difficult, the terracotta, within the context of Pantanello, may again provide a pictorial analogue for ceremonies associated with the local cult. Variant findspots for the two different terracotta images indicate moreover that worshippers elected where to display their gift, memorializing their piety, concerns, and possibly their own ritual actions within the grounds of the sanctuary itself.

INTERDISCIPLINARY INTEGRATION IN RECONSTRUCTING AGRICULTURAL CROP HISTORIES

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Fuks, Daniel (McDonald Institute for Archaeological Research, University of Cambridge) - Ryan, Philippa (Interdisciplinary Research, Royal Botanic Gardens Kew) - Alexander, Michelle (BioArCh, Department of Archaeology, University of York) - Peña-Chocarro, Leonor (Paleoconomía y Subsistencia de las Sociedades Preindustriales, Instituto de Historia, Consejo Superior de Investigaciones Científicas - CSIC)

Session format: Regular session

The knowledge of the origin of cultivated plants is interesting to agriculturists, to botanists, and even to historians and philosophers concerned with the dawnings of civilization."

The above opening line from Alphonse de Candolle's *Origin of Cultivated Plants*, originally published in 1882, rings truer today more than ever. Crop histories are now reconstructed through the work of geneticists and agricultural scientists, historians and linguists, archaeobotanists and ethnobotanists. Research on long-term crop histories has been recognized as important for global food security and sustainability since current agro-biodiversity is a product of long-term crop diffusion and evolution. Yet, interdisciplinary integration within this field of study has been underutilised. In association with the newly formed Crop History Consortium, this session aims to explore the added value of interdisciplinary, multidisciplinary and mixed methods research for uncovering the trajectories by which agricultural crop plants have diffused and evolved. We seek papers that exemplify novel or underutilised synergies, including but not limited to: integration between ethnobotany, textual and linguistic studies, the range of archaeobotanical subdisciplines (carpological, palynological, anthracological, phytolith, starch, parenchyma analyses, etc.) and the range of archaeological science techniques applied to ancient plant remains (GMM, stable isotopes, archaeogenomics, other chemical and biomolecular techniques, etc.). We aim to focus on the past 2000 years but will consider all papers involving integrated research on the spread, cultivation, and evolution of crop plants following their initial domestication.

1 CROP HISTORY RESEARCH: FORGOTTEN AND REMEMBERED CROPS

Abstract author(s): Peña-Chocarro, Leonor (Research Group Palaeo-economy and subsistence of pre-industrial societies, Institute of History, Spanish National Research Council - CSIC) - Ryan, Philippa (Interdisciplinary Research, Royal Botanic Gardens Kew) - Alexander, Michelle (BioArCh, Department of Archaeology, University of York) - Ros, Jérôme (Institut des Sciences de l'Évolution de Montpellier [UMR ISEM]) - Gros-Balthazar, Muriel (Institute of Research for Development) - Dabrowski, Vladimir (Muséum National d'Histoire Naturelle, UMR 7209) - Muthukumar, Sureshkumar (Department of History, National University of Singapore) - Hansen, Annette (Research Group Social and Cultural Food Studies - FOST, Department of History, Vrije Universiteit Brussel) - Heinrich, Frits (Research Group Social and Cultural Food Studies - FOST, Department of History, Vrije Universiteit Brussel; Research Group Industrial Microbiology & Food Biotechnology - IMDO, Department of Bioengineering Sciences, Vrije Universiteit Brussel) - Fuks, Daniel (McDonald Institute for Archaeological Research, University of Cambridge)

Abstract format: Oral

Domesticated plants represent massively diverse stories of evolutionary success and failure. Some domesticates overcame restricted natural distributions of their wild progenitors to become among the most widely grown plants on the planet. Some survive only in small pockets marked by rare microenvironments and/or unique symbioses with humans. Others have become extinct entirely. The evolution of numerous agricultural varieties, each adapted to unique environmental and cultural conditions is part of this process, recently catalyzed by post-industrial developments in selective breeding, genetic engineering, and gene editing. Modern crop improvement has, in turn, promulgated research by agronomists using crop histories as key to winning the race toward higher yields or resilience. In so doing, the history of research may have replicated inherent biases toward high-yielding grain crops, leaving others forgotten. Meanwhile, the drive toward high-potential new crops may have introduced a source of counter-bias and in research. We explore such trends in crop history research through a meta-analysis of multi-disciplinary research conducted on a number of domesticated plants. Our aim is to evaluate the extent to which research in different disciplines fields (ethnobotany, comparative linguistics, history, archaeobotany, biogeography, population genetics and palaeogenetics, geometric morphometrics, stable isotopes and other archaeological sciences) has been conducted for a variety of domesticated plants. More than a historiographic cross-section of crop history research, this study may have important implications for agenda-setting in the present and future.

2 FROM PAST TO PRESENT - INTEGRATING ETHNOBOTANICAL, ARCHIVAL, AND ARCHAEOBOTANICAL EVIDENCE FOR CROP HISTORIES IN NORTHEAST AFRICA

Abstract author(s): Ryan, Philippa (RBG Kew)

Abstract format: Oral

Integrating ethnographic, archival, and archaeological evidence can provide deep time perspectives on crop histories. Agricultural systems in NE Africa have changed profoundly over the last century at different temporal and spatial scales. Combining both recent and long crop histories can be important for considering the extent to which current agrobiodiversity reflects processes of long-term crop diffusion and evolution and insight into the past history of crops increasing described today as 'forgotten'. This paper focuses on northern Sudan and several case-study crops, including barley, date palms, lablab and lupins to compare the types of information recoverable from diverse sources. The value of expanding historical approaches with ethnobotany will be discussed, for example developing ethnobotanically orientated oral histories and methods for interrogating archives. Additionally, the potential of such methods will be briefly contrasted between Sudan and Ethiopia - through highlighting how variations between data sources, modern development histories and persisting crop diversity and traditional practices will influence both the scope and methodological approaches for examining long term crop histories.

3 ON THE EVOLUTIONARY HISTORY OF THE DATE PALM (PHOENIX DACTYLIFERA)

Abstract author(s): Gros-Balthazard, Muriel (IRD Montpellier)

Abstract format: Oral

The history of the date palm (*Phoenix dactylifera*) remains a mystery despite its significant importance in oasis agrosystems of North Africa and West Asia.

For more than 10 years, multiple lines of evidence have been used to study the origins and evolution of this species. The analysis of hundreds of genomes from the entire distribution range has helped us understand the structure and extent of its diversity. This combined with seed morphometrics showed that the ancestral wild date palms can be found in Oman, contrary to earlier beliefs that they were extinct. This evidence also revealed gene flow from a wild

relative species into the North African germplasm. Archaeogenomics of ancient remains has provided further insight into this introgression event, including a timestamp. Finally, seed morphometric analysis of ancient seeds has shown how diversity has evolved over the last 3,000 years.

Expanding our study of ancient samples by both morphometrics and archaeogenomics is expected to provide additional insights into the domestication and diffusion history of this iconic crop, and by extension, that of oases.

4 THE STORY OF OLIVE CULTIVATION IN THE SOUTHERN LEVANT: GENETIC AND MORPHOMETRIC ANALYSIS OF LIVING TREES AND ARCHAEOLOGICAL FINDINGS

Abstract author(s): Ben Dor, Elad (Institute of Plant Sciences, Department of Vegetables and Field Crops, Volcani Research Institute; The Robert H Smith Faculty of Agriculture, Food and Environment, the Hebrew University of Jerusalem) - Schmerler, Noam - Cvikel, Deborah (School of Archaeology & Maritime Cultures, University of Haifa) - Dag, Arnon - Barazani, Oz (Institute of Plant Sciences, Department of Vegetables and Field Crops, Volcani Research Institute)

Abstract format: Oral

The domestication process of olives (*Olea europaea*) is still a subject for debate among scholars. One of the main hypothesis is that its domestication started in the southern Levant. With that assumption in mind and with some of the earliest evidences of olive fruits usage (table olives and olive oil) that have been found in this region, the history of olive cultivation in the southern Levant is being studied. Here, molecular tools are used to understand the genetic background of local ancient landraces and the wild ancestor of cultivated olive (var. *sylvestris*). In addition, computerized analysis tools are applied in morphometric measurements of their pits in comparison to the available collection of archeological olive pits from. Doing this, our work is centered on elucidating the history of cultivar selection and use. It is also assumed that by assessing several agronomical traits of ancient landraces, information on past selection processes can be provided, which can also result in reintroduction of ancient cultivars that were selected by humans to withstand the local semi-arid conditions.

5 ETHNOGRAPHICAL AND ARCHAEOBOTANICAL RESEARCH IN THERASIA ISLAND IN CYCLADES WITHIN THE FRAMEWORK OF ARCH2PLANT PROJECT

Abstract author(s): Gkatzogia, Eugenia (LIRA Lab - Laboratory for Interdisciplinary Research in Archaeology Research, Dept of Archaeology, School of History and Archaeology, Aristotle University of Thessaloniki) - Stavridou, Evangelia (Institute of Applied Biosciences, Centre for Research and Technology - Hellas) - Sbonias, Kostas (Department of History, Ionian University) - Athanasiou, Konstantinos (Department of Architecture, Polytechnic School, Aristotle University of Thessaloniki)

Abstract format: Oral

The ethnographical research is part of Arch2Plant project an innovative interdisciplinary collaboration of scientists, from fields of architecture, agricultural sciences and archaeology/ archaeobotany that aims to reconstruct the unexplored rural, residential and natural environment of Therasia island, and its two-way relationship with the modern and ancient plant biodiversity. More specifically, the ethnographical work was based on fieldwork and oral interviews carried out in Therasia island. The ethnographical work provides information on the traditional cultivated crops, wild, fruit and nut harvests, old-fashioned farming practices (manuring, watering, etc.) and the role of plants in the everyday life of the inhabitants of Therasia until the recent times. Many aspects of the rural history of the island are highlighted, such as the relationships and patterns emerging from the dietary habits and uses of plants in Therasia island. The ethnographical work offers a valuable feed-back of the knowledge of traditional crops that gets lost, due to decline in population, internal migration, and abandonment of traditional agricultural modes of production. In combination, the archaeobotanical study of the Early and Middle Bronze Age settlement of Koimisis, situated in the south side of the island, will shed light into reconstructing the prehistoric plant diversity, paleoeconomy and the paleoenvironment of the settlement.

6 A LEAP FROM THE PREHISTORIC TO THE MODERN AGRO-DIVERSITY AND FLORA OF THERASIA. AN INTEGRATED APPROACH OF THE ARCH2PLANT PROJECT

Abstract author(s): Stavridou, Evangelia (Institute of Applied Biosciences, Centre for Research and Technology - Hellas) - Gkatzogia, Eugenia (Department of Archaeology, School of History and Archaeology, Aristotle University of Thessaloniki) - Madesis, Panagiotis (Institute of Applied Biosciences, Centre for Research and Technology - Hellas) - Sbonias, Kostas (Department of History, Ionian University) - Athanasiou, Konstantinos (Department of Architecture, Polytechnic School, Aristotle University of Thessaloniki)

Abstract format: Oral

This work is part of the Arch2Plant project seeking to study the rural architecture and diachronic settlement development in relation to the flora of the region and plant palaeoenvironment with the aid of additional archaeological, architectural, and ethnographic evidence, complemented with innovative molecular plant identification approaches. To understand the modern and past agricultural environment and flora of Therasia we have employed an interdisciplinary synergy by investigating the modern and prehistoric plant diversity of the island. We aim to explore the common agricultural crop plants of the past and the present and how agriculture has evolved in this unique volcanic environment. The multi-disciplinary approach will be focusing on i) reconstruction of the past plant diversity through on-target sequencing of the sedimentary ancient DNA (sedaDNA), along with archaeobotanical analysis of plant remains from the pre-historic soil stratum of the systematic excavation of the Early and Middle Bronze Age settlement of Koimisis, ii) the molecular analysis of modern plant species using DNA barcoding, iii) taxonomic identification of plant species along with seasonal coverage and composition of modern vegetation in the abandoned settlements and different rural habitats and measuring vegetation from satellite images with normalized difference vegetation index (NDVI) in different seasons, and iv) ethnographic research of the island's traditional crops and recent agricultural history. This work is expected to reconstruct a comprehensive picture of the island's cultural landscape and plant diversity in relation to rural activity and the changing pattern of the island's inhabited sites diachronically, ultimately shedding light on the emergence of Therasia's uniqueness. Such an interdisciplinary approach may offer a new perspective for similar environmental, spatial, biomolecular, archaeological, and ethnographic studies.

7 WHY WON'T YOU EAT YOUR PEAS?! AN INTERDISCIPLINARY APPROACH TOWARDS INVESTIGATING UNDERUTILISED CROPS

Abstract author(s): Collins, Adam - McClatchie, Meriel - Negrão, Sónia (University College Dublin)

Abstract format: Oral

The UN Food and Agriculture Organisation estimates that 75% of crop diversity has been lost between 1900 and 2000. Such loss of biodiversity has serious implications for food security in the context of climate change and environmental degradation. Urgent action is required to diversify crop production and broaden genetic diversity. Ireland has a deep and rich history of farming. Although ancient Irish farmers cultivated a wide range of crop species and varieties, nowadays farming is focused on a narrow variety of crops. This has resulted in some crops being underutilised, despite their great potential in terms of being nutrient dense, suited to European climates and environments, and viable for sustainable production in Ireland. *Pisum sativum* (pea) is a good example of this, having been cultivated for around two millennia in Ireland but not extensively cultivated nowadays. CROPREVIVE is a mixed-methods project that investigates the trajectories of selected crops to understand how their use has diffused and evolved in Irish agricultural practices. CROPREVIVE aims to align findings on ancient practices (from archaeology and history) with current data from plant sciences to seek resilient crops adapted to sustainable practices, and to tackle environmental, economic and cultural barriers to increased production in a modern context.

8 EVOLUTION OF PLANT CONSUMPTION IN THE MEDIEVAL CITY OF SAINT-OMER, FROM THE 13TH TO THE 16TH CENTURY

Abstract author(s): Connan, Marion (EVEHA)

Abstract format: Oral

Two excavations campaigns carried out between 2020 and 2021 by Eveha in the city of Saint Omer (62) in the north of France revealed a dense occupation linked to the rise of the Medieval town of Saint-Omer. This demographic growth was likely encouraged by the founding of the abbey of Saint-Bertin, the development of the textile trade thanks to a canal linking the city to Gravelines and the English Channel, as well as the establishment of cultivable marshes in the immediate vicinity.

A complex stratification and many exceptionally preserved structures were recovered due the high water table and other waterlogged contexts. Several wooden elements, leather and abundant plant macroremains were also found.

The study of the carpological remains from Saint-Omer provides a picture of the evolution of plant consumption and exploitation between the central Middle Ages and the Modern era. In particular, it allows the probable identification of market gardening practices related to vegetable gardens and orchards, noticeable through many cultivated species and associated weeds.

The aim of this submission is to present these two macrobotanical data sets and their implications for the evolution of plant foods production and supply.

9 PEARL MILLET IN THE IBERIAN PENINSULA: FROM AN UNKNOWN MEDIEVAL CROP TO A FORGOTTEN FOOD TODAY

Abstract author(s): Jorda, Guillem (University of Valencia) - Peña-Chocarro, Leonor (Instituto de Historia, Spanish National Research Council - CSIC) - Sabato, Diego (University of Valencia)

Abstract format: Oral

Pearl millet (*Pennisetum glaucum* L.) is a crop originating in West Sub-Saharan Africa, which has been cultivated until recently in small pockets in the Spanish province of Ciudad Real (south of Madrid). It was traditionally used to produce a type of cakes widely consumed in times of scarcity although nowadays it has almost disappeared. The first archaeobotanical evidence in Iberia suggests that it was introduced around the 12th century AD, perhaps by the Almohads whose empire extended from present-day Mali and Mauritania to Syria including the south of the Iberian Peninsula. Beautiful desiccated inflorescences, spikelets and grains have been found in cliff-granaries of the Valencia region (eastern Iberia) together with many other plant remains. More recently, seeds have been also recovered from an Islamic site in the city of Córdoba (southern Iberia) in later chronologies which suggests an association with the Arab world.

Surprisingly, the Castilian chronicles written after the conquest of the Islamic territories do not include references to this crop, so little information is available in the written sources. However, some Valencian sources, recall the cultivation of a species called “dacsá” which seems to have been a widespread crop at the time. Written sources have always translated “dacsá” as sorghum (*Sorghum bicolor*) and the term is currently given in Catalan to maize (*Zea mays*), suggesting that the word may have been transferred from an old crop when in the 16th century maize was introduced into Europe. By combining, archaeobotany, written sources, ethnobotany and linguistics, this presentation explores the history of this crop in Iberia, its traditional uses in those areas where it has been cultivated until recently, and it examines the possibilities that “dacsá” was the name given to pearl millet instead of shorgum. This work has been done within the framework of the ERC project MEDAPP (ERC-AdG-101054883).

10 USING VARIANCE IN GRAIN MEASUREMENTS TO EXAMINE THE EVOLUTION OF IMPROVED RICE CULTIGENS IN YAYOI TO HISTORICAL JAPAN

Abstract author(s): Stevens, Chris - Brainerd, Leah - Carrignon, Simon - Crema, Enrico (McDonald Institute, University of Cambridge)

Abstract format: Oral

Rice agriculture came to the Japanese archipelago in the Yayoi Period (c.950 BCE-250 CE). From northern Kyushu agriculture first spread eastwards to become established in western Honshu by 800 to 500 BCE, diffusing via coastal regions of the Sea of Japan into northern Japan (Tohoku) by the later 1st millennium BCE. However, this first agricultural foray was short-lived and disappeared before the end of the 1st millennium BCE only becoming firmly re-established during the Kofun Period (250-538 CE).

It has been hypothesised that the first rice cultigens were genetically variable, with a slow adaption resulting in varieties better suited to the changing environments across the Japanese Archipelago. Previous studies used rice measurements and aDNA to examine the appearance of new varieties, however, little change in grain size and shape was detected. In this paper a different approach was taken. It was hypothesised that early less adapted strains would have a higher variance in grain measurements compared to later adapted varieties, especially as rice agriculture moved into higher latitudes. An analysis of 34,000 published charred rice grains metrics from 234 sites was conducted to test this theory. Variation in the assemblage-wise means and variance of rice metrics were examined via a multi-level Bayesian model for Yayoi and Kofun periods. Preliminary results suggest a possible correlation in increased variance in grain shape and size with higher latitudes. Further, variance was higher in grain shape in the Yayoi period than the Kofun period.

This initial study supports the hypothesis that after the Yayoi period rice varieties emerged that were better adapted to environments found within the Japanese Archipelago particularly within more northerly latitudes. This theory can be compared to previous evidence that suggest a transition occurred during the Yayoi to Kofun period that resulted in more stable agricultural systems.

FIELDS, SICKLES, AND GRAINS: SPECIES DISTRIBUTION MODELLING OF THE ECOLOGICAL NICHE FOR RICE IN JAPAN DURING THE YAYOI PERIOD

Abstract author(s): Brainerd, Leah - Carrignon, Simon - Crema, Enrico (University of Cambridge) - Madella, Marco (University Pompeu Fabra) - Yoshida, Akihiro (Kagoshima University)

Abstract format: Oral

During the 1st millennium BCE, migrant communities from the Korean Peninsula entered Japan, introducing an extensive culture package and profoundly changing life within the archipelago. Core elements of this cultural package were rice and millet agriculture, which dispersed into the Japanese islands through a mixture of demic and cultural diffusion. This process led to different responses amongst the incumbent population of complex hunter-gatherers, the Jomon people. In some areas the uptake of this new subsistence saw significant delays, and in others the early adoption of farming was followed by reversion to a predominantly hunting and gathering economy. The geographically diverse response to the continental subsistence economy is generally assumed to be reflecting the underlying variation in the environmental and climatic settings of the Japanese islands. However, this assumption remains untested, and further exploration of the relationship between environmental and social factors is required to elucidate the diversity of local responses. This paper contributes to this research agenda by exploring how environmental suitability for rice agriculture impacted the spatial distribution of archaeological sites in the Yayoi period. To explore this topic, we employ Bayesian species distribution modelling (otherwise known as eco-cultural niche modelling) to estimate the realised ecological niches for Japonica rice using three distinct proxies for its presence: paddy field sites, charred remains of rice grains, and stone sickles. The comparison and exploration of these different lines of archaeological evidence will offer a robust inferential framework for reconstructing the ecological and cultural factors that promoted or hindered the diffusion of rice farming in prehistoric Japan.

705 RECONSTRUCTING HUMAN-ENVIRONMENT RELATIONSHIPS IN EXTREME ENVIRONMENTS: THE ROLES OF GEOARCHAEOLOGY, ZOOARCHAEOLOGY, AND ARCHAEOBOTANY IN WATER-DOMINATED AND IN WATER-DEPRIVED LANDSCAPES

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Rizzetto, Mauro - Bivolaru, Alexandra (Ca' Foscari University of Venice) - Aragón-Nuñez, Enrique (University of Almeria) - Garavello, Silvia - Forti, Alessandra (Ca' Foscari University of Venice)

Session format: Regular session

Interdisciplinary approaches to the reconstruction of past human-environment relationships have become standard practice in archaeological research. The integration of results from geoarchaeological, zooarchaeological, and archaeobotanical research plays an especially important role when human settlement developed in 'extreme' environments, such as water-dominated (e.g. river deltas, lagoons, archipelagos) and water-deprived landscapes (e.g. desertic and semi-desertic regions). Here, these disciplines face peculiar challenges and opportunities, with methods and research questions having to be constantly adapted based on site accessibility, preservation conditions, and the nature of past and present human occupation. Research projects in past human interactions with water-dominated and water-deprived landscapes also provide a historical background to current climate change-related draughts and floodings, whether as isolated events or longer-term changes in environmental conditions, which are increasingly impacting on modern communities throughout the world and imposing constant re-assessments of water management policies. This session invites presentations integrating evidence from geoarchaeological, zooarchaeological, and/or archaeobotanical research focusing on specific sites and regions where water or its absence impacted on the nature of human settlement. The session aims to provide a common platform for researchers tackling human-environment relationships in such peculiar environments, from northern Europe to the Mediterranean, and from prehistoric times to the Modern Era.

ABSTRACTS

1 ZOOARCHAEOLOGICAL AND ARCHAEOBOTANICAL RESEARCH IN THE VENETIAN LAGOON: EVIDENCE, OPPORTUNITIES, AND CHALLENGES

Abstract author(s): Forti, Alessandra - Garavello, Silvia - Rizzetto, Mauro (University Ca' Foscari of Venice)

Abstract format: Oral

Zooarchaeology and archaeobotany in the lagoon of Venice are now well-established disciplines, being developed by researchers from local (Ca' Foscari University of Venice, Natural History Museum Venice) and foreign institutions under the auspices of archaeological Soprintendenze. This paper will provide a state-of-the-art review of the evidence

so far available, and offer examples of how the results from these two disciplines can be integrated. The evidence presented belongs to the Roman and medieval periods. In fact, most of the material analysed was recovered from sites dated to these periods; at the same time, this chronological comparative approach will allow to highlight and interpret differences and similarities on both sides of the Roman-medieval transition, as well as within the Middle Ages. The results need to be contextualised within the environmental setting of these sites, all located around the lagoon or on islands within it; the settlement layout and economy would have been strongly influenced by water in different ways: from threats posed by erosion and silt-up, to the use and improvement of water courses, trade and supplies, the management of fresh water, and the exploitation of marine resources. This study also provides the opportunity to present and discuss the advantages and methodological challenges of excavations in these environmental settings, from water management, to preservation of the material and recovery strategies. Finally, zooarchaeological and archaeobotanical research in the lagoon can inform initiatives aimed at improving the sustainability of animal and plant use in such peculiar environments, as well as integrate educational offers within an intensely frequented microregion.

2 NATURAL CONSTRAINTS AND POTENTIALITIES IN THE VENICE LAGOON IN ANTIQUITY: A GEOARCHAEOLOGICAL PERSPECTIVE

Abstract author(s): Bivolaru, Alexandra (Ca'Foscari University)

Abstract format: Oral

This paper discusses the importance of a multi-proxy geoarchaeological approach to the interpretation of the archaeological dataset in a water-dominated environment – the Venetian Lagoon. Despite their high potential in terms of understanding the constructions of waterscapes in the lagoon and human-environment entanglement, the paleo-environmental reconstructions at site-scale remain surprisingly overlooked in archaeological research. We propose hence an integrated multi-proxy approach to discuss micro-ecologies and geoarchaeological narratives by choosing as study-case the Roman site of Lio Piccolo. More specifically, the focus will be on understanding (i) the evolution of wetlands in the floodplains and the lagoon through geochemical, bio-sedimentological, palynological and archaeobotanical analysis; (ii) the role of an environment plentiful of resources between eco-determinism and economic/social and political choices; (iii) river and coastal constraints (accessibility to the sea, flooding, erosion due to sedimentary budget crises, vulnerabilities, etc.), which have led to progressive clogging of the margins of the lagoon and caused environmental changes; (iv) measuring the impacts of human actions on the natural evolutive trend of the lagoon (direct through actions such as engineering works, channeling, dredging, metal pollution revealed by stable isotopes of lead and trace elements or indirect impacts such as forest clearing).

Through this case study, we aim to emphasize the importance of an integrated palaeoenvironmental approach when addressing long-term societal dynamics within peculiar and challenging environments.

3 THE PILE-DWELLING SITE AT THE LAKES OF SAN GIORGIO AND SANTA MARIA (REVINE-LAGO AND TARZO, ITALY): NEW CONTRIBUTIONS

Abstract author(s): Modolo, Marta (Università degli Studi di Ferrara, Dipartimento di Studi Umanistici, Sezione di Scienze preistoriche e antropologiche) - Rizzo, Enzo (Università degli Studi di Ferrara, Dipartimento di Fisica e Scienze della Terra) - Deiana, Rita (Università degli Studi di Padova, Dipartimento dei Beni Culturali: archeologia, storia dell'arte, del cinema e della musica) - Censini, Matteo (Università degli Studi di Padova, Dipartimento di Geoscienze) - Thun Hohenstein, Ursula (Università degli Studi di Ferrara, Dipartimento di Studi Umanistici, Sezione di Scienze preistoriche e antropologiche)

Abstract format: Oral

The lakes of San Giorgio and Santa Maria are two basins located in a glacial valley, at the foothills of the Veneto Pre-Alps, in the municipalities of Revine-Lago and Tarzo (Treviso, Italy). Archaeological pre-existences date back to 1923 when a Sauerbrunn bronze sword, followed by other bronze artefacts, was found while excavating an artificial canal. In 1987, the first pile-dwelling remains were discovered. During the 1990s, several excavation campaigns documented a peri-lacustrine settlement dating to the late Neolithic-Eneolithic, with sporadic frequentation during the Bronze Age. Since 2019, as part of the reLacus project, the University of Ferrara has undertaken a new phase of multidisciplinary research in collaboration with the University of Padua. During three field campaigns, underwater prospectings, geoarchaeological cores, geophysical acquisitions and archaeological excavations were carried out to identify new settlement areas and reconstruct formation processes and paleoenvironment. Non-invasive prospectings on over 7,000 m² identified magnetic anomalies concentrations and permittivity variations, which would be connected to anthropic evidence.

The test pits and the excavation of 2022 highlight a rather homogeneous peat layer of anthropic origin, representing the settlement phase. A lake flooding phase, with grey clay loam deposition, has sealed the anthropic layer allowing exceptional conservation of remains. Archaeobotanical analyses describe an environment characterized by predominantly mixed oak woods, also with arboreal hygrophytes and fruit plants. The faunal assemblage is characterized by

domestic animals, mainly bovinds, pigs and sheep/goats, flanked by some wild species like bears and small carnivores. The settlement continuity is further confirmed by pottery production, both for daily use and food storage, by the production of necklaces and pendants from bones and teeth, as well as by the procurement of lithic raw material from areas close to the settlement.

4 FROM WETLAND TO DRYLAND: LANDSCAPE CHANGE OF LAKE NEUSIEDL AREA (AUSTRIA/HUNGARY) DURING THE HOLOCENE

Abstract author(s): Draganits, Erich - Weißl, Michael (University of Vienna) - Tobias, Bendeguz (Austrian Academy of Sciences) - Saliari, Konstantina (Natural History Museum Vienna)

Abstract format: Oral

The Lake Neusiedl area is a unique lakescape, situated at the geodynamical and geomorphological border between the Alps, Carpathians and the Pannonian Basin, and represents an important transition zone concerning terrain, climate, vegetation, fauna and cultures. We use geological, geoarchaeological, archaeological, archaeozoological, high-resolution topographic, geomorphological approaches and data, as well as topographical and historical maps plus historical charters to reconstruct the palaeohydrology of Lake Neusiedl documenting dramatic landscape changes, especially in the last two centuries. Today, Lake Neusiedl (143 km² open water, 178 km² reed area) is the largest lake of Austria; it is regarded as endoreic lake with only 1120 km² catchment and thus mainly controlled by local precipitation and evaporation. The average depth is only about 1.4 m and the maximum depth not exceeding 1.8 m; the average lake level of the recent years was about 115.5 m above sea level (asl, Trieste, Adria). To the east, the lake is associated with about 30 shallow lakes – the largest less than 2 km long.

In contrast, virtually all historical maps and historical charters before 1780 show Lake Neusiedl connected with a low-moor, the so-called Hanság in the east. Additionally, in contrast with today, the Lake/Hanság was connected with several rivers from the south and the documented episodic variation of the water levels of Lake Neusiedl, between desiccation and highest flood levels (117.6 m asl), affected enormous areas in this extremely low-relief region. More than 370 shallow lakes and presently dry basins, documented in this study are newly interpreted as thermokarst lakes that formed during early Lateglacial permafrost degradation after the end of the Late Glacial Maximum (LGM). These reconstructions have a huge impact on the landscape, fauna and vegetation, human settlement patterns, land use and communication routes – which should be considered in regional archaeological and historical interpretations.

5 A HAVEN IN THE MARSHES: AN INTEGRATED GEOARCHAEOLOGICAL APPROACH OF THE ARCHAIC AND CLASSICAL HARBOUR OF ANCIENT ABDERA, THRACE, GR

Abstract author(s): Mayoral, Alfredo (ICAC-Catalan Institute of Classical Archaeology, Landscape Archaeology Research Group - GIAP, Generalitat de Catalunya & Universitat Rovira i Virgili; Université Clermont Auvergne, CNRS, GEOLAB) - García-Molsosa, Arnau - Georgiadis, Mercurios (ICAC-Catalan Institute of Classical Archaeology, Landscape Archaeology Research Group - GIAP, Generalitat de Catalunya & Universitat Rovira i Virgili) - Papadopoulos, Nikos (Laboratory of Geophysical–Satellite Remote Sensing & Archaeo-Environment GeoSat ReSeArch, Institute for Mediterranean Studies - IMS, Foundation for Research & Technology Hellas - FORTH) - Kallintzi, Constantina (Ephorate of Antiquities at Xanthi, Archaeological Museum of Abdera) - Kefalidou, Eurydice - Trasanis, Gerasimos (National and Kapodistrian University of Athens, School of Philosophy, Department of History and Archaeology) - Ejarque, Ana (ISEM, Univ Montpellier, CNRS, IRD) - Orengo, Hèctor (ICAC-Catalan Institute of Classical Archaeology, Landscape Archaeology Research Group - GIAP, Generalitat de Catalunya & Universitat Rovira i Virgili; Catalan Institution for Research and Advanced Studies - ICREA) - Palet, Josep Maria (ICAC-Catalan Institute of Classical Archaeology, Landscape Archaeology Research Group - GIAP, Generalitat de Catalunya & Universitat Rovira i Virgili)

Abstract format: Oral

Mediterranean coastal landscapes have been the scenario of complex socio-environmental interaction since Prehistory, although they were often difficult to settle for ancient societies due to the widespread wetlands. The Thracian coast between the Nestos delta and the lake Vistonis was not an exception when Greek colonists from Klazomenae founded Abdera c. 650 BC, taking advantage of the single good anchorage in an otherwise marshy landscape. After its resettling by the Teians in 545 BC, Abdera flourished thanks to maritime trade and its excellent harbour. In order to explore the largely unknown socio-environmental interactions around that infrastructure crucial for the life of the colony, and its palaeogeographic evolution since Archaic times, we implemented an integrated geoarchaeological approach including coring, trenching, remote sensing and geophysics. Dry Early-Holocene palaeosols at the bottom of the stratigraphies of our cores are overlaid by marine seafloor sandy facies deposited after mid-Holocene transgression. These are in many cases covered by a thick unit of dark, organic fine silts rich in malacofauna and archaeological artifacts, developed since the 6th c. BC. These sedimentary facies are geographically constrained and seem to correspond to the infilling of a potential harbour basin. Geophysical results show that beach profiles were steeper,

and draughts deeper in the southern part of the harbour area, whereas its northern part had a much longer and shallower profile. All the area was gradually silted by sandy sediments since the 3rd-2nd c. BC, and geomorphological data suggest that sedimentary fluxes coming from the Archaic-Classical enceinte after its abandonment could have contributed significantly. In the Late Antiquity, all these deposits were draped by an irregular layer of coarse sediments likely resulting of a tsunami. Forthcoming multiproxy analyses of selected sedimentary sequences will allow us to dive deeper into the history of the harbour of ancient Abdera.

6 DROUGHT AND SUBSISTENCE PRACTICES: DISENTANGLING POSSIBLE ADAPTATIONS DURING PREHISTORIC TIMES IN SOUTHERN IBERIA

Abstract author(s): Schirmmayer, Julien (Christian-Albrechts-Universität Kiel) - Almeida, Nelson (Universidade de Lisboa) - Stika, Hans-Peter (Universität Hohenheim) - Weinelt, Mara (Christian-Albrechts-Universität Kiel)

Abstract format: Oral

Today the southern Iberian Peninsula is characterized by a highly seasonal climate with a rainy season during winter and distinct aridity during summer. Particularly, the south-eastern part is prone to desertification as overall precipitation levels are exceptionally low. This Mediterranean climate with pronounced seasonal differences in temperature and precipitation gradually established after the Holocene Thermal Maximum approximately 6000 years ago. In addition, the overall climate became drier during the last 6000 years. These long-term developments are punctuated by several aridity events – among others the well-known 4.2 ka event.

Particularly, the aridity events exerted a strong pressure on prehistoric societies. Archaeological studies point to frequent booms and busts of different societies on the southern Iberian Peninsula. One such example would be the Bronze Age El Argar society in south-eastern Iberia. Still, varying spatio-temporal patterns of human activity during drought events imply a highly dynamic and complex interaction between prehistoric societies and climatic deteriorations.

In order to disentangle this complex picture, we analyze archaeobotanical and archaeozoological remains from the southern Iberian Peninsula during Neolithic to Bronze Age times. A regional evaluation enables us to identify certain societies, which developed successful adaptation strategies to aridity crisis and others who might have failed.

7 LANDSCAPE DEGRADATION AND THE 'FAILURE' OF ALCATRACES, THE FIRST EUROPEAN OUTPOST IN A DRY TROPICAL ARCHIPELAGO (SANTIAGO ISLAND, CABO VERDE)

Abstract author(s): Castilla Beltrán, Alvaro (University of La Laguna) - Nogué, Sandra (CREAF) - Evans, Christopher (McDonald Institute for Archaeological Research)

Abstract format: Oral

Cabo Verde was the first dry tropical archipelago settled by Europeans (the island of Santiago in 1460 CE). Being previously uninhabited, the attempts at establishing a profitable colony in these unfamiliar dry volcanic landscapes involved different levels of socio-ecological adaptations and experimentation. In this study, we investigate the socio-ecological interactions in the environs of Alcatraces, an early Portuguese site situated within an estuarine embayment on the southeastern shores of the island, which was allegedly abandoned c. 1516 CE. The study of a 275cm test pit (SIR) composed of 12 strata with abundant shells and charred material allows for a long-term diachronic view of land use change associated with the rise and dawn of this early settlement. Multi-proxy archaeobotanical and palaeoecological analyses including palynomorph (pollen, spores), phytoliths, and charcoal analyses show different stages including the occurrence of fires, erosion, vegetation change, and finally the establishment of monocultures in the XIX and XX centuries. We evaluate diverse hypotheses of culture-environmental interactions that could explain site abandonment based on this new palaeoenvironmental data.

706 ON LAND AND UNDERWATER. DETECTION AND EVALUATION OF ARCHAEOLOGICAL SITES: COMPARATIVE METHODOLOGY ON A EUROPEAN SCALE [ARCHAEOLOGICAL PROSPECTION COMMUNITY]

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Peake, Rebecca (INRAP) - Ritondale, Manuela (Groningen University) - Marcigny, Cyril - Fontaine, Souen - Hulin, Guillaume (INRAP)

Session format: Regular session

Since the Planarch project in the early 2000s, the question of detection and evaluation of archaeological sites on land have been discussed but the specificities of underwater, wetland or land-water interface areas are often less considered. These areas - offshore and nearshore waters, intertidal zones, sandy coastal areas, lagoonal or deltaic

context and rivers have a strong archaeological potential. The EAA provides the perfect opportunity to think about the relevance of methods of investigation used in different countries across Europe, that include little or non-intrusive interventions (geophysical prospection, remote sensing, etc.) or the very intrusive interventions of (from auger sampling to linear trial trenches).

This session will initially focus on sharing experiences to assess how implemented methods are relevant in the case of detection and evaluation of archaeological sites, both from a theoretical point of view (regulatory framework) and from the point of view of practical application in the field. The aim will be to examine how various investigation methods (preliminary documentary studies, remote sensing, geophysical and hydrographic solutions, extent of trial trenches and organisation, recording systems, etc.) contribute to and limit archaeological detection and evaluation in these areas with severe constraints.

For water contexts as for the more common land areas, it seems relevant to discuss how we can use the preliminary evaluation phase as a research tool in its own right. While the scientific validity of the data from an evaluation phase is generally accepted, the value of this type of “sampling” as a tool for a large-scale interpretation can still be ignored.

Our aim is to share different experiences to highlight how datasets from archaeological evaluation are used to build models on different scales that provide information on the evolution of the impact of human activity on the natural environment, on its transformation and development.

ABSTRACTS

1 THE USE OF HIGH DEFINITION ORTHOPHOTOGRAPHY, LIDAR AND NEAR INFRA-RED IMAGERY TO IDENTIFY NEW ARCHAEOLOGICAL SITES AROUND NORTHERN IRELAND'S COASTLINE

Abstract author(s): Dunlop, Colin (Department for Communities: Historic Environment Division; Department of Agriculture, Environment and Rural Affairs : Marine & Fisheries Division)

Abstract format: Oral

In 2021 the Department for Agriculture Environment and Rural Affairs (DAERA) commissioned a topographic LiDAR, orthophotography and near-infrared survey of Northern Ireland's c.650km of coastline. Data at 0.25m resolution was acquired across a total area of 285km², encompassing the zone between the mean low water mark and 200m inland of the mean high-water mark, as well as all sand dune complexes. Desk-based analysis and review of the coastal LiDAR and orthophoto survey data was then undertaken for the purposes of mapping new heritage assets (and known heritage assets at risk from coastal erosion) for the entire coast of N. Ireland. This included creation of a marine heritage dataset for integration into the Historic Environment Record of Northern Ireland and the publicly available marine spatial planning map viewer. Where these features were not found to be already present within the Historic Environment Record of Northern Ireland, they were verified through physical site inspection before addition to the national monuments record. The survey identified 256 new archaeological features, 154 below the mean high-water mark and a further 102 sites within the 200m boundary above the mean high-water mark. These features included hut sites, enclosures, promontory forts, raths, quays, slipways, shipwrecks, defence heritage infrastructure and a helicopter.

This presentation will outline the methodology undertaken during the survey, the limitations identified within each of the three survey data sets and provide a summary of the results of the project.

2 A NOVEL APPROACH FOR AUTONOMOUS 3D ACQUISITION OF BURIED OBJECTS IN INTERTIDAL ENVIRONMENTS - FIELD EXAMPLES FROM AVALDSNES, NORWAY

Abstract author(s): Olsen, Thomas - Weibull, Wiktor - Escalona, Alejandro (Department of Energy Resources, University of Stavanger) - Vivås, Arild (Stavanger Maritime Museum, Museum Stavanger - MUST)

Abstract format: Oral

Underwater archaeology relies on expensive and time-consuming invasive methods to excavate objects or identify layers in shallow and intertidal environments. Areas with high level of sedimentation has better conditions for preservation of organic material i.e., archaeological objects. Invasive methods have a significant impact in the layers and the conditions for preservation as well as a low recovery factor in relation to time invested. To visualise cm level details sufficient for underwater archaeology, a non-invasive 3D acoustic acquisition with dense survey coverage is proposed to both increase the area of investigation and limit the use of destructive methodologies. Acquiring a sub bottom profiling dataset is normally performed by manually steering a vessel. However, the challenging conditions seen in an intertidal environment such as shallow water, narrow sounds, tidal changes, outcropping basement, and man-made structures make manual acquisition difficult.

The paper presents a solution to solve these challenges in form of an autonomous reconnaissance vessel that can acquire 3D acoustic data by a high frequency 2D Chirp sonar. The vessel was tested in four different environments

with man-made objects, strong currents, seaweed, and shallow waters and showed good results in terms of manoeuvrability and repeatability, producing a 25 cm x 25 cm 3D dataset with good resolution and S/N ratio. The dataset was further interpolated and migrated to a 15 cm x 15 cm bin size. The final 3D migrated cube shows a seismic image of a known buried shipwreck from the medieval period. The vessel's design has global implications as it can act as a first stage for archaeological survey in areas where traditional methods are difficult. Improving the design by adding low-frequency acquisition instruments can enable penetration through shell sand layers and for applications in geo-technical investigation.

3 RECONSTRUCTING THE CULTURAL DYNAMICS OF COASTAL AND SHALLOW SUBMERGED ARCHAEOLOGICAL SITE WITH GEOINFORMATICS

Abstract author(s): Papadopoulos, Nikos (Foundation for Research and Technology Hellas- FORTH)

Abstract format: Oral

The projected sea level rise due to climatic and geological factors has rendered the accessibility to information regarding the current-state of coastal and shallow submerged archaeological sites a necessity. Thus the development of ways to explore and promote these under-studied submerged contexts, improving at the same time the community awareness and involvement in protection practices is quite important. Based on this framework the project "Clepsydra: Translating Submerged and Buried Cultural Heritage from Shallow Water to Digital environment with Geoinformatics" funded by the Hellenic Foundation for Research and Innovation, will integrate the archaeological research with state-of-the-art methodologies and innovative technological aspects in order to document and promote coastal and submerged cultural heritage material adapting the equipment and practices to the ultra-shallow underwater context. The contribution to the documentation of current state of cultural heritage in different sites in eastern Mediterranean focusing mainly in Greece will pass through: a) aerial/satellite remote sensing –specifically targeted to historical reconstruction of coastal zone and seabed–, b) digital photogrammetry –with customization of remotely controlled floating device and specific protocols to account for the camera/lens distortion in water medium–, c) geophysical mapping (electrical resistivity tomography and multisensor magnetic gradiometry) –with adaptation of sensors and protocols for the wet environment, d) risk assessment –integration of collected spatial information for the estimation of risks for cultural sites–, e) Virtual/Augmented Reality platform –fed with the above for the promotion of submerged cultural material in unprecedented ways. Ultimately, the results of this work can be integrated in the strategic framework of developing an effective interdisciplinary research model that could be applied to similar archaeological surveys in coastal or shallow-water environments thus contributing substantially towards the management and promotion of the concealed cultural resources.

4 OSTIA: NEW RESEARCH FOR THE RECONSTRUCTION OF THE COASTAL AREAS

Abstract author(s): Turci, Marcello (University of Graz) - Poletto, Alice (British School at Rome) - Ducati, Fabrizio (University of Palermo) - Montesinos, José (Universitat Politècnica de València) - Stoppioni, Maria Luisa (Soprintendenza Emilia-Romagna) - Salomon, Ferréol (CNRS - University of Strasbourg) - Saintenoy, Albane (University of Paris Saclay) - Mathé, Pierre-Ethienne - Uehara, Minoru (CEREGE - CNRS)

Abstract format: Oral

This paper presents the findings of an ongoing international and multidisciplinary project started in 2018, whose aim is to investigate the transformations of Roman Ostia's coastal area outside the so-called Porta Marina.

Building on the investigation of two large compounds—the Baths of Porta Marina (thermae maritimae) and the Sub-urban Complex IV, XVII, 4, to the north of the via Severiana—and through a multidisciplinary approach that includes the examination of archive documents and findings from previous excavations, UAV photogrammetry, remote sensing, ground coring, as well as archaeological excavations, this project aims to investigate the evolution of Ostia's coastal landscape between the first and the sixth centuries AD.

In this paper, we will concentrate on two different phases, that are distinguished by significant transformations. First, we will look at the second half of the first century AD, just before Trajan-Hadrian's urban renovation of Ostia. We will then address the latter half of the third century AD—the years of the so-called Illyrian emperors—which will be examined against the backdrop of the remarkable urban transformations that Ostia's coastal area underwent in the fourth century AD, when it will play a crucial role in the new, poly-centric layout of the late-antique city.

5 GEOPHYSICAL PROSPECTION OF NORTH-FRISIAN TERP LANDSCAPES. AN ERASMUS+ BLENDED INTENSIVE PROGRAM

Abstract author(s): De Smedt, Philippe (Ghent University) - Rabbel, Wolfgang - Majchczack, Bente - Wilken, Dennis - Wunderlich, Tina (Institute of Geosciences, Kiel University) - Trinks, Immo (Vienna Institute for Archaeological Science, University of Vienna) - Verhegge, Jeroen (Department of Archaeology, Ghent University; Department of Environment, Ghent University)

Abstract format: Oral

The North-Frisian terp landscape (DE) is characterised by multi-phase settlement systems in a complex wetland environment. This archaeological landscape stems from the colonisation and exploitation of the area from the Iron Age to the Middle Ages, during which it was transformed by the construction of terps on riverbanks, and the later reclamation of bog areas.

This complex context poses significant challenges for prospection and landscape reconstruction. In the summer of 2022, in a collaboration between the Universities of Kiel, Vienna, Ghent, Bratislava and Mainz, a multi-method prospection campaign was mounted to map the archaeology and environmental setting of the area. To this end, we combined geophysical surveys with downhole logging and core sampling. Two type-sites were chosen; a village terp originating from the 1st century BCE and a group of smaller, High Medieval, terps. This field research was conducted as a field school in a Blended Intensive Programme from the ERASMUS+ programme, providing 20 students with hands-on survey experience. Subsequent on-line teaching sessions provided theoretical background on the different survey methods, and integration sessions allowed exploring aspects of data interpretation and combination.

The complex archaeology of the terp landscapes does not provide the most straightforward target for archaeological prospection. Particularly unravelling different occupation phases, or clear settlement structures beyond traces presumed related to the later (High to post-medieval) occupation of the landscape, proved highly challenging in the survey areas. This complexity provided a highly useful backdrop for teaching geophysical methods, as both the potential and limitations of each method could be clearly illustrated, alongside the need for multi-method approaches and invasive validation.

In this presentation, we will outline the course structure and learning goals, along with the survey outcomes and impact on both teaching and researching archaeological prospection.

6 SCALING NEA PAPHOS' MARITIME CULTURAL LANDSCAPE

Abstract author(s): Babucic, Nikola (University of Hamburg) - Misk, Łukasz (Jagiellonian University Kraków) - Ostrowski, Wojciech (Warsaw University of Technology) - Papuci-Władyka, Ewdoksia (University of Warsaw; Jagiellonian University Kraków) - Seifert, Martina (University of Hamburg)

Abstract format: Oral

The UNESCO Heritage Site of Nea Paphos which covered an area of over 100 hectares in ancient times, is located on a prominent promontory on the island of western Cyprus. In the Hellenistic and Roman period, it was a distinctive urban center in the ancient eastern Mediterranean. Its maritime cultural landscape changed until today demonstrating a continuous settlement history. Over the last eight years, non-invasive and invasive methods have been carried out in the area of Nea Paphos Archaeological Park. The international collaboration project follows an interdisciplinary approach providing new insights into the spatial organization of the city. The focus is on the research of urban development, social and economic infrastructure in general. Essential are the investigation of the maritime infrastructure, especially the port facilities and landing places. Methods as remote sensing, photogrammetry, geophysical prospection, survey and excavation have been generated varying data sets for archaeological evaluation. From the data obtained so far, geophysical interpretation maps of the archaeological features, models of coastal transformation, as well as 3D models of the excavation sections were created, which will be fed into an interactive WebGIS in the course of the project.

In our paper, we will show how such a multifaceted approach allows us to understand the reciprocal interaction of sea and land in the formation of cultural, social and economic phenomena.

7 THE CULTURAL LANDSCAPE OF FAILAKA ISLAND IN THE ARABIAN GULF, KUWAIT

Abstract author(s): Nowakowska, Magdalena (University of Warsaw) - Świda, Jakub (Freelancer)

Abstract format: Oral

The Polish-Kuwaiti project: „Waterfront and Underwater Archaeology of Kuwait. Archaeorisk on the Coastal Zone around Failaka Island, Kuwait” started in spring 2013. It is the first archaeological project on Kuwait’s underwater cultural heritage. It aims to locate and document archaeological sites that bear witness to the activities of local communities in the coastal zone around Failaka Island in the Arabian Gulf. The task includes the presentation of an archaeological map of „underwater archaeological sites” with their catalogue, which could be used to prepare a programme for

the protection of Kuwait's underwater cultural heritage and serve the implementation of the 'UNESCO Convention for the Protection of the Underwater Cultural Heritage, Paris 2001'.

During the six survey seasons (2013 - 2019), 35 stone structures were recorded. Most of them were of two types of stone structures interpreted as fish traps: 1. circular stone structures and 2. linear structures of varying sizes. Both types are also referred to in the literature as stone tidal weirs which we understand as weirs or overflows, used to catch fish in the floodplain. In addition to the infrastructure related to fishing, which was probably one of the most important economic profiles of the islanders during the Islamic period, the remains of two harbours were also located (fig. 2). One large port with a full infrastructure in the bay of Al-Khidr, probably functioning as early as the second millennium BC, and the remains of a second small port or harbour in the bay of Karaib el-Desht.

The Polish-Kuwaiti Archaeological Mission operates on the basis of an agreement between the Centre for Mediterranean Archaeology at the University of Warsaw and the Kuwait National Council for Culture, Arts and Letters.

8 FORMAL MODELLING APPROACHES TO OPTIMIZE ARCHAEOLOGICAL INVESTIGATIONS: AN ENQUIRY INTO LIMITATIONS, POTENTIALS AND CHALLENGES OF PREDICTIVE ASSESSMENT IN UNDERWATER CONTEXTS

Abstract author(s): Ritondale, Manuela (Groningen Institute of Archaeology, University of Groningen)

Abstract format: Oral

Despite the significant contribution of remote sensing technologies to the detection and documentation of previously unreachable underwater archaeological sites, extensive surveys remain costly and challenging to sustain in extensive areas. This contribution, which is based on the results of a PhD research concluded in 2022, will discuss the utility of predictive modelling for optimizing archaeological investigations, particularly in underwater contexts. Indeed, within the maritime domain, the adoption of archaeological predictive maps is extremely rare and not yet standard practice for supporting desk-based preliminary studies carried out in advance of archaeological prospection. This underdevelopment highlights the necessity to overcome methodological shortcomings but also hints at possible distrust toward the technique, which reflects a mistaken notion of what formal modelling in general, and predictive modelling in particular are, and what they should achieve. After introducing a GIS model developed to predict the shipwreck probability in Mediterranean territorial waters based on multicriteria cost-surface analysis, this lecture will particularly focus on the solutions adopted to overcome some of the main limitations of current archaeological predictive modelling; these include the unheeded effects of input data biases and problematic testing. The aim is to promote, on the one hand, the increasing adoption of a tool that may significantly optimize archaeological surveys and the detection of underwater sites, thus without neglecting their current limitations; on the other hand, encourage international cooperation to share best practices - and data- for testing archaeological models, which is essential to their improvement.

707 OPEN ACCESS REMOTE SENSING DATA IN CULTURAL HERITAGE MANAGEMENT, ARCHAEOLOGICAL RESEARCH, AND CITIZEN SCIENCE

Session theme: 3. Heritage Narratives and Representations

Session organisers: Dias, Rita (Era Arqueologia S.A.; ICArEHB - Interdisciplinary Center for Archaeology and the Evolution of Human Behaviour) - Fonte, João (Universidade da Maia/ISMAI) - Neves, António (Universidade de Aveiro) - Marsh, Fernando (Universidade de Aveiro) - García Sánchez, Jesús (Instituto de Arqueología de Mérida, Consejo Superior de Investigaciones Científicas)

Session format: Regular session

The increasing availability of open access remote sensing data (airborne LiDAR, aerial and satellite imagery...) has been critical for archaeological research and cultural heritage management by both public and private institutions namely local, regional, and national governments and universities but also in preventive archaeology. In addition, the development of simplified and highly efficient computing algorithms, the increase in computational power and the increasingly systematic use of artificial intelligence (automation vs manual archaeological mapping) have greatly contributed to this panorama. However, what is the real impact of these data on efficiency and effectiveness at the level of mapping and cataloguing of archaeological sites? Has the true potential of this data really been exploited by the public and private sectors for the benefit of cultural heritage and society? What synergies can we create to encourage their increasingly systematic use? What examples and good practices can we learn from? What constraints and threats can there be to cultural heritage?

We would like to discuss the pressing social demand for a new generation of high-resolution open access remote sensing data, and how these data would benefit both scientific research and heritage management. We would also like to discuss the role of crowdsourcing and citizen science in contributing and benefiting from these data. Our goal is to showcase projects and case studies that contribute to the discussion on the potential and impact of open access

remote sensing data on archaeological research, cultural heritage management and citizen science and crowdsourcing practices. Finally, we also want to discuss the potential limitations and threats to cultural heritage due to the availability of these data in open access.

ABSTRACTS

1 COMPARATIVE PERSPECTIVES ON THE USE OF OPEN-ACCESS REMOTE SENSING DATA IN ARCHAEOLOGY AND CULTURAL HERITAGE IN SPAIN, PORTUGAL AND ITALY

Abstract author(s): Fonte, João (ISMAI) - García Sánchez, Jesús (Instituto de Arqueología de Mérida, CSIC) - Dias, Rita - Pereiro, Tiago (Era-Arqueologia)

Abstract format: Oral

In Spain, the National Geographic Institute (IGN) has long had a policy of open-access to remote sensing data, particularly in the scope of the National Aerial Orthophotography Plan (PNOA). This includes essentially multitemporal aerial imagery, as well as two LiDAR coverages, the third of which is already underway. All data can be downloaded online.

In Portugal, the Directorate General for Territory (DGT) only recently has started to make their data available in open-access. The data is only available through web servers, so it cannot be directly downloaded. No systematic LiDAR coverage is yet available in Portugal. DGT has recently announced the first systematic LiDAR coverage of Portugal and this data will be fully open-access.

In Italy, only areas prone to hydrogeological risk were covered by LiDAR data. The acquisition organized in different phases contributed to the creation of datasets with great potential for archaeological research. LiDAR data is available through WMS or direct communication with Environmental agencies.

Comparatively, what was the differential impact at the level of archaeological work and heritage management, both in the public and private sectors in these countries? This paper will discuss the main limitations and opportunities for archaeology and cultural heritage derived from this open-access to different types of remote sensing data.

The participation of data collectors has great potential, and the importance of engaging the public in the scientific process thus promoting a scientific culture is clear. In Mediterranean countries, this is still an uncommon practice. The risks of these practices in archaeology and cultural heritage are, in part, due to the need for more social awareness of heritage's good practices and an underground culture of treasure hunters. The generalization of recreational use of drones, geocaching, trekking, and other activities could have the potential to importantly contribute invaluable data for archaeology and cultural heritage.

2 OPEN-SOURCE REMOTE SENSING DATA FOR THE CHARACTERIZATION OF THE IRON AGE IN ESUKADI

Abstract author(s): Hidalgo-Masa, Jagoba (UPV/EHU) - García Sánchez, Jesús (IAM-CSIC) - Solana-Muñoz, Andrea (INCIPIT, CSIC) - Vicente García, Víctor (Veterum Archaeologists S. L.)

Abstract format: Oral

The intended paper aims to present the ongoing research about the Iron Age occupation of the Atlantic coast of the Basque Country (Iberian Peninsula). The project departs from common Landscape Archaeology premises stemming from other scholarship in the Iberian Peninsula. However environmental issues as thick pine forests, extremely rugged terrain and access to sites. These three environmental factors pose serious problem for both research and heritage preservation. A non-invasive approach based on LiDAR sensing would provide a basis for testing research hypothesis and to assess the preservation of archaeological zones.

We will present the methodological approach consisting of a spatial sampling of the Basque coast to assess different archaeological scenarios. This process is organized among the team members who inspect several LiDAR products from geo.Euskadi.eus and create a comprehensive map of features and traces that later on are related to legacy data, such as archaeological gazetteers, evidence in the Archaeology Museum at Bilbo. Secondly, the project uses a combination of the abovementioned publicly available LiDAR datasets with private drone-mounted Lidar flights over key sites (Malmasin or Sollube) on sites where the data quality is not good enough to provide answers posed by the project, as the existence of ramparts, fortifications, or other earthworks. The later process involved the participation of local communities in the organization of flight plans, cleaning, and other works in the sites before ground-truthing with on-site geophysics, and eventually the assessment of heritage conservation and elaboration of guidelines.

3 HERITAGE QUEST: TWO-TIER CITIZEN SCIENCE RESEARCH PROJECT ON LIDAR DATA FROM THE CENTRAL NETHERLANDS

Abstract author(s): Lambers, Karsten (Leiden University) - Kaptijn, Eva (Erfgoed Gelderland) - Verschoof-van der Vaart, Wouter (Landschap Erfgoed Utrecht; Leiden University) - Bourgeois, Quentin (Leiden University)

Abstract format: Oral

In this paper the results of the first large-scale citizen science project in Dutch Archaeology, named Heritage Quest (Erfgoed Gezocht in Dutch), are presented. The goal of this project was to record archaeological remains at large scale in forested areas in the central Netherlands.

The Citizen Science project consisted of two parts. First, in 2019-2020 more than 6500 citizen researchers participated in an online project, run on Zooniverse, in which they were asked to mark three classes of archaeological objects, namely barrows, Celtic fields, and charcoal kilns in small snippets (300x300 m²) of open LiDAR data from the Veluwe and Utrechtse Heuvelrug regions in the central Netherlands. The system provided these snippets in two different visualizations, hillshade and Simple Local Relief Model, to aid the volunteers, many of whom had little prior archaeological knowledge. To achieve comparable results across the datasets, every snippet was classified by 15 (Veluwe) or 60 (Utrechtse Heuvelrug) individuals before it was retired.

This online project resulted in over 22.000 potential barrows, 38 km² of previously unknown Celtic fields, and over 900 potential charcoal kilns. While some of these locations were marked by only a few people, others were marked by many, indicating a varying degree of consensus among the citizen researchers.

Subsequently, in 2021-2022 a coring campaign by citizen researchers and students from Leiden University was conducted to validate a representative selection of the detected barrows, covering the full range from few to many markings in the online project. The results of the fieldwork indicate a clear correlation between the number of markings and the probability that the marked location was indeed a barrow. Based on this, a plausible probability can now be assigned to the many other potential barrow locations, thus helping regional heritage managers to assess the value of the new archaeological dataset.

4 UNCOVERING THE PAST: THE ROLE OF REMOTE SENSING IN ARCHAEOLOGICAL RESEARCH OF THE CHOLISTAN DESERT

Abstract author(s): Rai, Tajammal (Heritage Matters)

Abstract format: Oral

This paper will focus on recent archaeological discoveries through remote sensing in the Cholistan Desert, located in southeastern Punjab, Pakistan. Previous archaeological surveys of the 1940s, to the 1990s, explored hundreds of archaeological sites of the Indus Valley Civilization and explained the changing course of the old bed of the Ghaggar-Hakra River; the lifeline of ancient dwellers. However these surveys were carried out in the lesser Cholistan but the greater Cholistan remained unexplored, except for the identification of four medieval forts. In contrast, during recent investigations of the greater Cholistan using remote sensing tools and techniques, more than fifty archaeological sites have been discovered in the greater Cholistan or deep desert. The discovery of these archaeological sites can provide researchers with further sources to understand the population shift based on the Ghaggar-Hakra River from greater Cholistan to lesser Cholistan. A physical survey is currently underway to verify and discover new archaeological sites in the deep desert; it recently confirmed four recently discovered sites through remote sensing with little difference in their diameter. There could be some drawbacks of open access remote sensing such as ambiguous interpretation of heritage sites and exploitation of the facts but still, remote sensing is one of the best ways to discover and analyse archaeological sites. The present research project comprises a comprehensive survey and mapping of archaeological sites and ancient routes using GPS-generated tracks, locations, and pictures of the current situation of sites tracing the dried bed of the Ghaggar-Hakra River. The current survey is showing the importance of remote sensing particularly in deserts and forests. At the end of this survey, a complete map of the region will be produced using ArcGIS from the first discovered site to the last one.

5 THE FOOTPRINT OF THE STONE: IDENTIFICATION AND GIS-BASED ANALYSIS OF IRON AGE HILLFORTS IN THE UPPER EBRO REGION

Abstract author(s): Solana-Muñoz, Andrea (INCIPIIT - Institute of Heritage Sciences; CSIC - Spanish National Research Council)

Abstract format: Oral

This proposal steams from my current Ph.D. project, which aims to study the historical sequence of the Iron Age (8th - 2nd c. BC) in the Upper Ebro from a Landscape Archaeology perspective.

Large areas within the study zone - province of La Rioja and part of the provinces of Soria, Burgos, Navarre, Araba and Zaragoza- are characterized by the fragmentation and scarcity of archaeological information, as well as the absence of studies that relate the sites to each other and to their surroundings. Being conscious the biased archaeological record, I argue that an approach from the perspective of Landscape Archaeology and the use of non-invasive methods, is promising to produce a broad-scale temporal and spatial interpretation of the social dynamics of this period.

The work I will display will include showing how the use of remote sensing products (LiDAR), has been instrumental in the identification of defensive structures of the sites catalogued as Iron Age hillforts. In addition, and based on the scholarship of Parcero-Oubiña and Nión-Álvarez (2021), this work aims to establish quantitative variables through GIS-based methods to identify spatial dynamics reflected in their construction: extension of settlement area, percentage of total area occupied by defensive structures, and the amount of effort invested.

Results from the present study will illustrate the potential that non-invasive methodologies and GIS have for the reconstruction and modelling of past landscapes, as well as the importance of Landscape Archaeology for the interpretation of social and cultural patterns. Besides, this study will show how the use of remote sensing data is essential for proposing new perspectives on the study and management of the archaeological record in the area.

Bibliography:

- Parcero-Oubiña, C., Nión-Álvarez, S. (2021). Forms of settlement inequality over space. A GIS-based method for measuring differences among settlements. *Journal of Archaeological Science: Reports*, 35.

A. FIRST RESULTS OF GEOPROSPECTION SURVEY ON THE NORTH-EASTERNMOST NEOLITHIC RONDEL IN EUROPE AT TYLICE, POLAND

Abstract author(s): Urban, Maciej (Nicolaus Copernicus University in Toruń) - Czerniec, Jerzy (Institute of Archaeology and Ethnology of the Polish Academy of Sciences) - Sosnowski, Mateusz (Nicolaus Copernicus University in Toruń)

Abstract format: Poster

It was believed until recently that rondels were a distinctive element of the early Neolithic landscape in the region of modern Austria, Slovakia and the Czech Republic. However, recent discoveries from the North European Plain have changed this view: at least ten enclosures have been reported from Poland that are identified as rondels, including two enclosures of such type coming from the Chełmno land. The same region has yielded evidence for an intensive and stable settlement by the early farming communities, which formed the northeastern border of the European Neolithic. The discovery of rondels in northern Poland proves to be essential in tracing the flow of the idea of erecting monumental enclosures and testifies to cross-cultural relations in Central Europe throughout the 1st half of 5 millennium BC.

This work reports on the newly discovered rondel in Tylice near Toruń. The discovery was made through analysis of satellite images and followed by a geoprospection survey of the site. The combined results of the geomagnetic prospection and UAV imaging provided a complementary dataset allowing to zoom into the spatial arrangement of the rondel, including its ditches and entrances. The DMT data obtained from the LIDAR analysis allowed the assessment of the nearby landscape and physiography, which helps to better understand the act of erecting a rondel at Tylice. Future research is planned at the site to excavate the structures and associated material identified so far.

B. INTEGRATION OF DEEP LEARNING MODELS INTO THE ODYSSEY GIS FOR ARCHAEOLOGICAL SITE DETECTION USING A MICROSERVICES ARCHITECTURE

Abstract author(s): Canedo, Daniel - Georgieva, Petia - Neves, António (University of Aveiro)

Abstract format: Poster

Recently, Deep Learning has been explored as a promising solution for detecting archaeological sites in LiDAR data. However, the integration of these algorithms with existing or under development archaeological Geographic Information Systems (GIS) remains a challenge. To address this issue, in this work we propose the use of web services that streamlines the integration process. These web services can be called by the GIS for training deep learning model or inference tasks. As a use case, we explored this architecture in the Odyssey project GIS, where a user interface page has the option for selecting a region on the map, where LiDAR data is available. When used for training, the information about the location and dimensions of the region, as well as the existing occurrences validated on sites on that region are sent for the web service. Moreover, the user can choose from available Deep Learning models and determine which classes of archaeological occurrences to use for the training process. The web service converts the selected region into a dataset of the LIDAR data, that meets the model requirements, performs data augmentation, and trains the selected model. If the inference task is selected, the user can choose which Deep Learning model to use and the eventual detected occurrences in that region are returned to the GIS. This microservices architecture offers a powerful and semi-automatic way of accommodating Deep Learning solutions into archaeological GIS.

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Vindrola-Padrós, Bruno (Institut für Ur- und Frühgeschichte, Christian-Albrechts-Universität zu Kiel) - Almansa Sánchez, Jaime (Instituto de Ciencias del Patrimonio, Consejo Superior de Investigaciones Científicas) - Scholtus, Lizzie - Szilágyi, Kata - Müller, Johannes (Institut für Ur- und Frühgeschichte, Christian-Albrechts-Universität zu Kiel)

Session format: Regular session

Since the emergence of phenomenological approaches in archaeology, there has been a wide appreciation of the epistemological importance of understanding how people perceived their environment, rather than creating disembodied representations of it (often claimed to be 'objective'). With the advent of material agency and post-phenomenological theories, the understanding of past human perception and how it was influenced by the material world has become even more vital, highlighting the need to develop appropriate methodologies to answer these questions. Methods for studying human perception have evolved in archaeology from the pioneering studies in landscape archaeology, such as viewshed analysis using GIS and the study of site acoustics, to more recent chertic approaches and eye-tracking methods. Yet, bearing weight on these approaches is the recognition that, because humans are socialised in different ways, there may not be a clear way to characterise a 'model' of feeling, thinking or doing that pertains to all humans. Consequently, the meaning of how we perceive the world today may not correspond to how people perceived it in the past, i.e. contra 'presentism'. One potential solution, which XSCAPE (ERC-funded project) is trying, is to substitute the "how" of perception as content, for the "how" of perception as a way: what cognitive processing tell us about past and present perceptions and how this is influenced by the material world.

The session aims to discuss methods/techniques used for the study of past human perception, attempting to integrate methodological innovations with more established ones in our discipline. Secondly, we wish to enquire on the limitations of assuming universal models of human perception and how we might be able to address them. We welcome papers that bring forth new perceptual methods for archaeological research and concrete applications in specific case studies, as well as submissions that critically engage with questions about presentism.

ABSTRACTS

1 HUMAN PERCEPTION IN ACTION: THE COLLECTION AND USE OF FOUND OBJECTS AS MEDIUMS FOR OBJECT-MAKING DURING THE PALAEOLITHIC PERIOD

Abstract author(s): Efrati, Bar (Department of Archaeology and Ancient Near Eastern Cultures, Tel Aviv University)

Abstract format: Oral

This study will propose that conscious perception has existed since Early Palaeolithic times and can be detected and discussed by inspecting the first facilitators of cognitive practice: the process of object-making using subtraction methods (e.g., knapping and carving).

The study will hold a theoretical discussion on perception through the presentation of three Paleolithic case studies of tools and portable objects made from defined material mediums using subtraction, proposed to be termed found objects: the collection and recycling of 'old' existing flint items into tools, the use of bones as materials for the creation of tools and portable objects, and handaxes made on thin and/or small flint slabs. Especially since the limited shape range of the original material may dictate a change in the engagement and creation process if subtraction is used, thus requiring a change in perception.

The discussion will focus on the perception of these materials from an "enactive" perspective and follow the decision-making process from the decision to collect and re-create from found objects until the finished product is achieved. By choosing to relate to perception as enactive, the discussion will deal with the active place and role of the senses; of knowledge and experience; as well as of ontological, cosmological, and cultural worldviews as facilitators of an attentive state which afford to perceive particular objects and work from them.

Finally, the study will claim that enactive perception was involved in every step of the item's chaîne opératoire, from the choice to act and collect, through the process of alteration, to the finished object.

2 PERCEPTION AND STONE TOOLS. AN APPROACH TO PAST VISUAL BEHAVIOUR THROUGH LITHIC TECHNOLOGY

Abstract author(s): Silva Gago, María (Instituto de Ciencias del Patrimonio - INCIPIT, CSIC) - Fedato, Annapaola (Centro Nacional de Investigación sobre la Evolución Humana - CENIEH) - Terradillos-Bernal, Marcos (Universidad Isabel I de Castilla) - Bruner, Emiliano (Centro Nacional de Investigación sobre la Evolución Humana - CENIEH)

Abstract format: Oral

Vision is the dominant source of sensory information in humans. It channels the relationships between the individual and the environment, including tools. Due to the fact that we receive a huge amount of information from our surroundings, it is essential to selectively focus the attention on some stimuli instead of others. The patterns of visual attention can be studied through eye-tracking technology, which consists of measuring eye position and movements. Taking into account the relevance of visual perception in the human genus, this technology can provide a useful approach to understand visual behaviour from an evolutionary perspective. In this sense, we developed a series of experimental studies involving different stone tool technologies and different scanning conditions. Our results showed that each lithic technology triggers a different visual strategy, which suggests that there are distinct attentional patterns involved in the interaction with these tools. Although tools have been interpreted as the output of the cognitive system, different disciplines have adopted an embodied cognition perspective, arguing that physical tools should be considered as a functional part of the cognitive network. Following this approach, archaeological remains would be an active element of cognition, and not mere products of the brain. Likewise, different sets of artefacts would represent different cognitive elements, which are susceptible to experimental studies

3 ARTSOUNDSCAPES: EXPLORING SOUND PERCEPTION AND EMOTION IN PREHISTORIC ROCK ART LANDSCAPES

Abstract author(s): Díaz-Andreu, Margarita (ICREA; Institut d'Arqueologia de la Universitat de Barcelona - IAUB; Universitat de Barcelona) - Santos da Rosa, Neemias - Alvarez Morales, Lidia (Institut d'Arqueologia de la Universitat de Barcelona - IAUB; Universitat de Barcelona) - López-Mochales, Samantha - Aparicio-Terrés, Raquel (Brainlab; Institute of Neurosciences; Universitat de Barcelona) - Escera, Carles (Brainlab; Institute of Neurosciences; Institut d'Arqueologia de la Universitat de Barcelona - IAUB; Universitat de Barcelona; Institut de Recerca Sant Joan de Déu - IRSJD)

Abstract format: Oral

Most rock art studies are carried out framed in an image-centred Western ontology, prioritising sight over sound perception. However, sound, and the emotions that it triggers, are fundamental components of every cultural, social and ritual practice. The inclusion of sound in archaeological studies in general, and in the field of rock art in particular, is not an easy task. It requires the interdisciplinary collaboration of several, disparate fields, including archaeology, physical acoustics, psychoacoustics, neuroacoustics and ethnomusicology. Since 2018 the ERC Artsoundscapes Project has put together specialists in all these disciplines to work together exploring the interconnections between sound and rock art. In particular, the Artsoundscapes project aims to study the role of sound and emotion in the way in which rock shelters and areas were selected to be painted or carved, and the sonic experiences that individuals may have lived through in them. The project has undertaken fieldwork in a series of rock art landscapes in Europe, Africa, Asia, and North America. The project team has developed a multidisciplinary approach through six research lines. In this paper, we present the methods and practices related to this innovative perspective and discuss two case studies to dissect the relevance of human sound perception to the study of prehistoric rock art landscapes

4 XSCAPE: A CONCEPT TO GO FROM FORMAL REGULARITIES IN THE MATERIAL WORLD TO SHARED INNER MODELS

Abstract author(s): Criado-Boado, Felipe (INCIPIT-CSIC)

Abstract format: Oral

XSCAPE is the acronym for a project on which this session is based (an ERC Synergy Grant). But what does it mean? We have landscapes, seascapes, skyscapes, soundscapes..., we have scapes of all kinds. Landscape is a concept based on an ancient root that also refers to relationship and is even related to form and shape. This etymology, despite the frequent use of landscape studies in archeology and other disciplines, has often not been recognized. Etymology suggests that shapes, related to different realms of experience and different material or cultural codes, present something in common that relates them to each other. This conjectural sense requires to go beyond anhistorical etymologies to social and cultural history and ask if there is in fact a certain regularity common to different phenomena in the same field, and if this regularity is compatible with the arrangements present in other fields. Is there something that approximates the common form of certain types of architecture, for example, the pattern of the landscapes of which they are part, the way of ordering their skyscape and their domestic scape? That common can be called, conjecturally,

XSCAPE. If such an XSCAPE exists, it implies the existence of an inner model that crosses the different fields of experience of a given society, which would have a cognitive dimension and be linked to the social mind of the moment and which, being so, could be explored empirically and experimentally, and not just be based on a robust theory. That is what the XSCAPE project on Material Minds intends to analyze. Part of the methodological model for this research is based on the X-EXPECT concept, which was the reference chosen by Andy Clark to analyze how expectations and predictions influence this internal model, instead of just being their effect.

5 STEPS TOWARDS MODERNISING POTTERY STYLISTIC ANALYSIS: THE FIRST RESULTS OF USING EYE-TRACKING METHOD IN GERMANY

Abstract author(s): Szilagy, Kata - Scholtus, Lizzie - Vindrola-Padros, Bruno (XSCAPE Project on “Material Minds” - ERC 2020 Synergy Grant 951631; Kiel University, Institute of Pre- and Protohistoric Archaeology)

Abstract format: Oral

A new ERC project (Material Minds: Exploring the Interactions between Predictive Brains, Cultural Artefacts, and Embodied Visual Search) has been established in Santiago de Compostela, Kiel and Brighton. The research focuses on how the human mind perceives the material world. We want to know more about the cognitive process of information and to address two questions: (1) what is the relation between human modification of the world and the transformation of cognition through perception of increasingly complex ways? (2) is there any universal unconscious way how we are looking at objects and creating our ‘material codes’ during the process of information? The classical archaeological research uses a typology for classifying objects based on their visual appearance and putting them into a previously determined order (material, cultural, chronological, etc.). This is the basis of all the pottery typo(-chrono)logical systems, which mostly count with the most preferred vessel forms and the typical decoration style. We would like to integrate the eye-tracking method into our archaeological tool-box to study the perception process of human-made objects like pottery and this way explore alternatives for the creation of more suitable classificatory systems. To this end, we create a database for further cross-cultural/regional analysis of how we are looking at different vessels.

In this paper, we would like to present the first results of our eye-tracking experiment at the Landesmuseum Halle (Saale). We preselected the pottery styles by 250 years of timespan based on the absolute chronological dataset and the previously existing detailed pottery typological system in Central Germany. We paid particular attention to marked socio-environmental transformational periods (5500-5400, 4900, 3800, 3300, 2800, 2200, 1800, 1600, 1300, 800, 400, and 150 cal BC) to prepare further studies about the cognitive archaeological modelling as well.

6 AN ARCHAEOLOGICAL PERSPECTIVE ON HUMAN COGNITION. CASE STUDY; TALL-E BAKUN (AN IRANIAN PREHISTORIC SITE)

Abstract author(s): Yadollahy, Sima (University of Leicester)

Abstract format: Oral

Cognition is engaged with the world, and human cognition is intertwined with material culture. Material culture, as a dynamic and integrated component of human life, has an important role in understanding and extending our knowledge of past ways of thinking and acting.

All material culture was created for specific purposes and reasons, and it reflects a part of its creators’ intentions, beliefs, actions, and minds. Tall-e Bakun A (ca 4000–3500 BC) is one of the most important late prehistoric sites in southern Iran, with discernible socioeconomic complexities. A new painted beautiful distinctive pottery at Tall-e Bakun displays a variety of geometric patterns, animals, humans, and composite decorative motifs. The decorative motifs and style of Bakun ceramics, as new material signs, create new ways of acting and understanding the world, as well as new modes of thinking.

This paper investigates the role of Tall-e Bakun ceramic decorative motifs and style in affecting people’s thoughts and cognition and explores how decorative styles have the capacity of guiding and influencing human cognition drawing upon Material Engagement Theory.

7 RETHINKING SENSES THROUGH TIME: SENSORIAL PUBLIC ARCHAEOLOGY AT THE FORT BIJ UITHOORN

Abstract author(s): Mura, Sara (Cluster of Excellence ROOTS; Christian-Albrechts-Universität zu Kiel) - Jordan, Pamela (Universiteit van Amsterdam)

Abstract format: Oral

Any built environment is a full sensory experience; architecture embodies a three-dimensional construct of certain intentions that is then manipulated by inhabitants, encoding their full sensory experiences through time. Built envi-

ronments are simultaneously perceived through our senses as a separate physical object and through the socially and culturally informed engagements we have with them. These engagements derive implicitly from our modern cultural framework (presentism); the role played by our contemporary interpretation of sensory experience is put into relief when the original users leave no direct accounts of their presence, as in many archaeological sites. How we experience a place today informs how we interpret its past.

Sensory archaeology can be applied to any silenced historical built environments, not solely archaeological settings. This presentation discusses the application of combined qualitative and quantitative sensory investigatory strategies at the Fort bij Uithoorn (NL), one of dozens of early 20th C. military forts encircling Amsterdam recognized as a UNESCO site. The detailed embodied history of the fort is effectively silent, often obscured behind military confidentiality. The structure remains in physical decline without alteration or significant conservation, in contrast to many related forts that have been functionally revitalized at the expense of sensorial authenticity.

A customized sensory walk and survey were developed to ascertain the sensory layer's contemporary composition and discover its relevance to visitors' historic encounter at the fort. The survey incorporated both quantitative and qualitative components, and participants were free to determine the most relevant areas for study throughout the site. The discussion focuses on the construction of the public sensory walk and the results and feedback it generated through this flexible approach. The multidisciplinary potential for this kind of approach to sensory archaeological investigations will be highlighted, particularly its reliance on public input and the benefits of less rigid research formats.

711 FAIR REUSE OF ARCHIVE DATA

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Jansen, Jane (Arkeologerna; Intrasis) - Stead, Stephen (Paveprime Ltd; Open University)

Session format: Regular session

The archaeological research community was an early adopter of digital tools for data acquisition, organisation, analysis, and presentation of research results of individual projects. (Richards 2022). As several projects have shown, digital data can be shared, but how can that data be used? To address those questions, principles and ontologies have been created and are ready to be applied.

One concept is FAIR data. FAIR data is data which meets the principles of Findability, Accessibility, Interoperability, and Reusability (FAIR). The acronym and principles were defined in the journal *Scientific Data* in 2016.

Digital archive access projects will revolutionise archaeological research and are vital if we want to attain the R in FAIR. However, it is necessary to apply an ontology to the data, otherwise the time needed to understand the semantics of each datasets is insurmountable. CRMarchaeo, an extension of the CIDOC CRM, is one way to link a wide range of existing documentation from archaeological investigations. It was created to promote a shared formalisation of the knowledge extracted from archaeological observations. It provides a set of concepts and properties that allow clear explanation (and separation) of the observations and interpretations made, both in the field and in post-excavation.

Using FAIR principles is critical to the creation of wider pictures of regions or periods and can also be a stepping stone to generating Big Data for further analysis.

In this session we invite presentations from organisations or projects who are addressing these issues. We are particularly interested in applications of the CIDOC CRM and its extension CRMarchaeo.

Richards, J. 2022, Presentation at CHNT Vienna

ABSTRACTS

1 TRUE INTEGRATION: MOVING FROM JUST FINDING ARCHIVES TO INTERPRETING ARCHAEOLOGICAL DOCUMENTATION UTILISING CRMARCHAEO

Abstract author(s): Stead, Stephen (Paveprime Ltd; Open University) - Jansen, Jane (Arkeologerna; Intrasis)

Abstract format: Oral

This integration study considers how the body of archaeological excavation databases of The Archaeologists (a department within the National Historical Museums of Sweden) were prepared for integration utilising the CRMarchaeo extension of the CIDOC Conceptual Reference Model (CRM). The Archaeologists create about 250 new Intrasis-databases each year (one for each new site) and currently have 1200 active and 1100 archived databases. Traditional GIS based gazetteers allow the discovery of which archives/databases are about the correct type of site or that are in the right geographic area. However, the researcher still needs to immerse themselves in the details of the individual archive to see if the research questions, excavation/recording methodology, and pragmatic responses to circumstances are compatible with the goals of the researchers' study. In comparison, with the CRMarchaeo ontology applied to the archives/databases, the work required to check if the data is fit for the study's purposes is possible at the

integration layer. This means more opportunities for innovative intra- and inter-site research as the effort required to discover appropriate material is reduced.

The presentation will showcase the work undertaken by Intrasis and Paveprime to prepare this approach and the benefits that have accrued from it: in particular the improved reusability when the databases are accessible through Swedigarch and also the greater clarity in the approach to future documentation practice.

CRMarchaeo, an extension of CIDOC CRM, is a way to link a wide range of existing documentation from archaeological excavations. The CRMarchaeo extension has been created to promote a shared understanding of how to formalise the knowledge extracted from the observations made by archaeologists. It provides a set of concepts and properties that allow clear explanation (and separation) of the observations and interpretations made, both in the field and in post-excavation.

<https://www.cidoc-crm.org/crmarchaeo/>

2 REUSE OR NOTHING! THE MATERIALISATION OF R PRINCIPLE THROUGH THE IMPLEMENTATION OF A SPATIAL DATA INFRASTRUCTURE: PEPADB

Abstract author(s): Romero-Garcia, Galo (Universidad de Sevilla) - Odriozola-Lloret, Carlos P. (Universidad de Sevilla; UNIARQ) - Garrido-Cordero, José Ángel (Universidad de Sevilla) - Sánchez-Gómez, Daniel (Universidad de Lisboa)

Abstract format: Oral

The significant growth of digital spatial information has led archaeologists all over Europe to increasingly rely on digital data to prepare and carry out archaeological research (McKeague et al. 2019). The main interest in the publication of spatial and non-spatial indexed archaeological data is to offer users the possibility of querying, downloading, and/or accessing them in external applications. These apps are aimed to model, analyze, display, or generate new geospatial data, information, and value-added resources, both in academia and general public. Given the extremely high cost of generating spatially indexed archaeological data, the reuse of this data by users is highly expected. As the result of not complying with the FAIR EU policy, the already existing spatial indexed archaeological data are not easily accessible and therefore hard to reuse by the general public, or the academia (Sobotkova 2018). PEPADB (Prehistoric Europe's Personal Adornment database) is a long term multidisciplinary and open research project which has materialized in a SDI (Spatial Data Infrastructure) and a web-app for the online publication of georeferenced archaeological scientific data referring to late personal adornment in Europe's Late Prehistory. PEPADB is maintained since 2010 through the concatenation of several R&D projects funded by the Spanish government. This initiative aims to comply with the FAIR principles encouraging the reusability of archaeological data through the use of standards by means of web spatial technologies.

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- McKeague, Peter, Rein van't Veer, Isto Huvila, Anne Moreau, Philip Verhagen, Loup Bernard, Anwen Cooper, Chris Green, y Niels van Manen. 2019. «Mapping Our Heritage: Towards a Sustainable Future for Digital Spatial Information and Technologies in European Archaeological Heritage Management». *Journal of Computer Applications in Archaeology* 2 (1): 89-104. <https://doi.org/10.5334/jcaa.23>.
- Sobotkova, Adela. 2018. «Sociotechnical Obstacles to Archaeological Data Reuse». *Advances in Archaeological Practice* 6 (2): 117-24. <https://doi.org/10.1017/aap.2017.37>.

3 CONVERGING AND DIVERGING VOCABULARIES - A CONSTANT STRIVE FOR NATIONAL AGREEMENT

Abstract author(s): Uleberg, Espen - Matsumoto, Mieko - Dell'Unto, Nicolo (Museum of Cultural History, University of Oslo) - Callieri, Marco (Institute of Science and Technologies of Information - National Research Council) - Pantos, George - Bonelli, Letizia - Indgjerd, Hallvard (Museum of Cultural History, University of Oslo)

Abstract format: Oral

The Norwegian university museums are presently cooperating in UniMus:Kultur to create a new version of the CIDOC-CRM-compatible artefact database that has been in use since 2004 (<https://www.khm.uio.no/english/research/projects/unimus-kultur/>).

The data are published at the Unimusportal (unimus.no/portal). They can also be downloaded or accessed as an open API at unimus.no.

Recent additions are 3D models from the BltFROST project and multilingual thesauri.

The artefact database has controlled vocabularies for cadastral entities, period names, artefact names, materials, find circumstances and find categories. As results of the ARIADNE+ project and cooperation within EOSC, the list of period names is registered in Perio.do, while artefact names and find categories are mapped to Getty's AAT.

The Museum of Cultural History (MCH) works through the 3D archive and dissemination infrastructure project BltFROST (<https://www.khm.uio.no/english/research/projects/bitfrost/index.html>) to increase the use of 3D documentation in research and teaching. BltFROST has improved MCH's structures for storing 3D data, and supports open source technologies as an approach for FAIR data management. It is built around the 3DHOP viewer, and it shares resources and strategies with the Dynamic Collections project in Lund, Sweden.

The mapping to of vocabularies to Getty's AAT is good to reach out internationally, but local translations between neighbouring countries can be more precise due to shared traditions and similar ecological conditions. One example is the Nordic cooperation "Nomina Rerum Mediaevalium" that has drawings and terminology for mediaeval artefacts in the five Nordic languages (Norwegian, Danish, Swedish, Icelandic and Finnish) - a dataset that we have now also mapped to Getty's AAT.

Mapping to common vocabularies and more standardisation will increase the FAIRness of archaeological datasets. However, regulated vocabularies can impose limitations on the understanding we have of material culture. Technology can have a distancing effect, and digital data can create what Huggett refers to as different data-imaginaries.

4 PHYTOLITH ONTOLOGIES - A COMMUNITY WORK TO IMPROVE THE INTEROPERABILITY AND THE REUSABILITY OF DATA

Abstract author(s): Dunseth, Zachary (Brown University) - Kerfant, Celine (Universitat Pompeu Fabra) - Lancellotti, Carla (Universitat Pompeu Fabra; ICREA) - Karoune, Emma (The Alan Turing Institute) - Ruiz-Pérez, Javier (Texas A&M University) - García-Granero, Juan José (Spanish National Research Council) - Harmse, Henriette (European Bioinformatics Institute - EMBL-EBI)

Abstract format: Oral

Phytoliths are microscopic silica bodies that form within living plants and can be used for taxonomic identification. They thus provide information for modern and ancient botanical, paleoenvironmental, paleoclimatic, paleontological and archaeobotanical reconstruction. Today, phytolith data are numerous but few are interoperable (e.g., readable by humans or machines), easily translatable to other languages, or reusable, and this hampers the development of the discipline (Karoune 2022). These long-standing issues negatively impact collaboration in archaeology, palaeoecology, and related disciplines, prevent reuse and meta-analysis of data, and have ramifications on learning, equity, and inclusion in phytolith science worldwide.

In response to these issues, the International Committee on Open Phytolith Science (ICOPS) was created within the International Phytolith Society (IPS) to work on increasing the knowledge and implementation of open science practices in the phytolith community. We present here one of the first initiatives of the group: the establishment of a unified phytolith ontology to help structure phytolith data for use and reuse in the future. This project is structured around the latest ICPN 2.0 nomenclature to assign unique and persistent identifiers to each phytolith morphotype. The ontology is built using ROBOT and Protégé, using version control on GitHub to work collaboratively and transparently, so all our work-in-progress is accessible.

5 MAPPING DATASETS TO THE CRMSURV MODEL: PROGRESS REPORT ON THE SEMAFORA PROJECT

Abstract author(s): van Leusen, Martijn - de Haas, Tymon (Groningen Institute of Archaeology) - Bruseker, George - Nenova, Denitsa (takin.solutions) - Siebinga, Sjoerd (Delving.eu)

Abstract format: Oral

In the course of 2022, the authors constructed and documented a conceptual reference model for fieldwalking surveys, CRMSurv, according to the CIDOC CRM guidelines, and have begun the construction of a mapping interface to allow data owners, with some training and expert guidance, to map their datasets to this model. Figuring out how to do this has caused some delays in the work, but we now expect to complete the mapping and validation by summer 2023. In this paper we will focus on the steps needed to achieve FAIR data *after* the construction of the conceptual model: how to present mapping options to data owners in a logical manner and sequence, how and where to enforce standardization of terminology and meaning, how to maintain centralized documentation of the mapping system (hint: ARCHES!), and how to seduce data owners to relinquish their data monopolies. We will also look beyond the ending of the funded SEMAFORA project in December 2023, to such questions as how to develop a sustainable business model for data mapping.

WHAT TO DO WITH YOUR CODE? TOOLS AND BEST PRACTICES FOR THE LONG-TERM SUSTAINABILITY OF CODE OUTPUTS IN ARCHAEOLOGY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Daems, Dries (Middle East Technical University) - Angourakis, Andreas (Ruhr-Universität Bochum)

Session format: Workshop

The volume of digital outputs produced by archaeologists has been increasing exponentially. Together with other types of digital objects, computational scripts, being those for data processing, analysis, visualisation or simulation, are now ubiquitous in almost all archaeological projects. However, this increase has raised important concerns about their long-term sustainability, which also carries similar challenges to the ones encountered in research data management more generally (Kansa & Kansa 2022). Where should they be stored? What contextual information should they contain? Who should maintain them beyond the life of a particular project? And how do we adjust the academic reward framework for those who deal less with standard publications and more with GitHub releases? These are but a few of the many concerns associated with this fundamental shift towards digital scientific practice. While many archaeologists are increasingly aware of these issues, many still lack hands-on practical experience with tools to implement best practices for code sustainability.

This workshop combines practical training and roundtable-style ideas exchange. During the workshop, we will:

- Review the most common platforms, tools and tricks for ensuring a long life of computational scripts,
- Exchange the experiences of making code, pipelines and metadata replicable and reusable,
- Discuss the current state of archaeological open science and ways in which we can advance the agenda (Marwick 2017).

At the end, we will draft a checklist of best practices and associated tools that can be used by any archaeologist planning a project that involves computational scripts.

ARTEFACTS, ARCHAEOLOGICAL SCIENCE AND EUROPEAN IDENTITIES IN IRON AGE ALPS, PANNONIA AND THE BALKANS [EAA COMTEX]

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Gleba, Margarita (University of Padua) - Potrebica, Hrvoje (University of Zagreb)

Session format: Regular session

Europe before national borders, especially in the Iron Age, was a world of intensive interactions and movements, resulting in fluid and composite identities. The study of such composite identities requires disentangling of their eclectic material culture. This session examines the identities of the communities in Iron Age Alps, Pannonia and the Balkans through studies of archaeological artefacts they left behind. Such artefacts and materials include but are not limited to textiles, leather, foodstuffs, metalwork, glass, pottery. Thanks to the advances in archaeological science we now have a far stronger set of tools to characterise and date these artefacts and to infer their provenance. Among numerous and varied methods are genetic, proteomic, isotopic and organic residue analyses, metallography as well as archaeobotanical and zooarchaeological approaches. Applying these and other methods to archaeological evidence, our goal is to understand the mechanisms behind identity formation and expression in this area using a bottom-up approach, providing a novel perspective on interaction networks measured on the basis of people's mobility and exchange of material objects, technology/skills/ knowledge, concepts/ideas/cultural traits. We particularly welcome innovative approaches that use archaeological science to disentangle the often eclectic nature of the material culture associated with populations that inhabited the region which was at the crossroads between Central European and Mediterranean cultures.

1 IRON AGE VENETIC NECROPOLIS OF PADUA: NEW DATA BY STRONTIUM ISOTOPE ANALYSIS

Abstract author(s): Gambacurta, Giovanna - Bortolami, Fiorenza (Ca' Foscari University Venice) - Cavazzuti, Claudio (University of Bologna) - Cipriani, Anna (University of Modena - Reggio Emilia) - Gamba, Mariolina (Independent researcher) - Lugli, Federico (University of Bologna) - Moscardo, Cecilia (Independent researcher) - Onisto, Nicoletta (Independent researcher) - Rasia, Piera Allegra (Independent researcher) - Ruta, Angela (Independent researcher)

Abstract format: Oral

From many years the team focused its attention on studying the protohistoric necropolis of Padua, especially the two largest and oldest. Alongside the systematic edition of contexts and physical anthropological analyses by gender, age, and paleopathology, isotopic analyses begin with this project. Strontium isotope analysis has been carried out on a sample of 24 individuals, 18 from the necropolis of Padova-via Tiepolo and 6 from the necropolis of Padova-Palazzo Emo Capodilista-Tabacchi, which represent two of the most relevant contexts for interpreting the dynamics of formation of the urban centre of Padua during the Iron Age. The analysed burials are dated to various phases of use of the burial areas, ranging from the 9th to the 6th century BCE. We sampled mostly adult individuals of both sexes from 18 cremations and 6 inhumations. The isotopic results, compared with available environmental baselines, show an overall intense mobility, with at least 43% of non-indigenous subjects. Interestingly, only one allochthonous individual is compatible with a provenance from the southern part of the Po plain, while most of the newcomers seem more probably to have originated from the more radiogenic districts of the Eastern Alps and/or from the Brenta/Sile/Piave river valleys. Non-indigenous individuals are documented in all phases, as well as amongst males and females, or amongst inhumations and cremations. Tomb EMO-664, one of the most ancient (900-825 BCE) is of particular interest, as it belongs to a high-status mature female with remarkable grave goods, whose probable origin is from the Eastern Alpine regions.

2 ELEMENTS OF CENTRAL/EASTERN EUROPE TRADITION IN 8TH CENTURY BC ARISTOCRATIC GRAVES IN VENETO (ITALY). CIRCULATION AND SHARING OF SELF-REPRESENTATION CODES

Abstract author(s): Baratella, Vanessa (University of Padua)

Abstract format: Oral

Between the end of the 9th and the 8th century B.C., the development and consolidation of the “proto-urban” system is clearly distinguishable in Veneto Region (Northern Italy). One of its peculiar markers is the highly-complex community structure, in which the emergence of aristocratic elites’ groups is attested. Relevant in these proto-urban societies is the strong, even wide-ranging, network established with the surrounding contemporary cultural entities, both Italic and extra-Italic. Well known and discussed in literature are the significant contacts and connections between Veneto and Central and Eastern European areas: the circulation of specific artefacts of high symbolic and ideological value, in particular bronze weapons, horse harness and metal-sheet vessels, marked by punctual typological parallels in a wide area between Austria, Germany, Croatia, Slovenia and Hungary, testify this phenomenon.

With the aim to investigate a possible widely and common shared ideology, expressed with the deposition in the grave goods of specific objects linked to precise codes of self-representation of the members of the aristocratic élites, some high-ranking graves – specifically from Este (Padua) and Rivoli Veronese (Verona) cemeteries – characterised by the presence of artefacts that can be surely included in this framework of relationships, will be discussed. In this regard, a deep analysis focused on typological and chronological aspects of these particular elements, certainly connected to relevant and apical figures of these communities, will be proposed.

3 BETWEEN THE MEDITERRANEAN AND CENTRAL EUROPE. CULTURAL IDENTITY FORMATION IN THE SOUTH-EASTERN ALPS THROUGH THE SETTLEMENT PRISM

Abstract author(s): Vojakovic, Petra (Arhej d.o.o.; Centre for Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana) - Prijatelj, Agni (Centre for Soil and Environmental Research, Biotechnical Faculty, University of Ljubljana; Centre for Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana) - Gruškovnjak, Luka (Centre for Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana) - Toškan, Borut - Tolar, Tjaša (Institute of Archaeology, Research Centre of the Slovenian Academy of Sciences and Arts) - Črešnar, Matija (Centre for Interdisciplinary Research in Archaeology - CIRA, Department of Archaeology, Faculty of Arts, University of Ljubljana; Institute for the Protection of Cultural Heritage of Slovenia)

Abstract format: Oral

During the early first millennium BC, distinct regional cultural characteristics started to emerge on the fringes of the south-eastern Alps (i.e. present-day Slovenia and its surroundings). Traditionally six cultural groups, primarily discriminated on the basis of their burial practices, are recognized in this area. While the burial rites reflect significant differences in the identities of these communities, the correlation between settlements and identities is less well understood.

In this paper, we address the issue by discussing two settlements in central Slovenia: Tribuna (in Ljubljana) and Pungrt above Ig (near Ljubljana), located a mere 10 km apart. Given that the two sites were excavated very recently with modern methodological approaches, they have both yielded a wealth of information on the Late Prehistory settlement culture in the region. As such, they are relevant to the ongoing debate regarding prehistoric identities. Tribuna is a lowland settlement, well protected by a river. Together with the surrounding sites, it forms the most important archaeological complex of the Gorenjska cultural group. In contrast, Pungrt, a hillfort settlement that has a monumental stone rampart and rises above the Ljubljana marshes, lies at the crossroads of the Gorenjska, Dolenjska and Notranjsko-Kraška cultural groups. While the two sites represent distinct settlement types, seemingly belonging to different cultural groups and exhibiting differing settlement dynamics, they share a number of similarities. Both are designed with a clear internal layout, suggesting urbanistic planning. As long-lasting settlements existing (with shorter hiatuses) for almost a Millennium, they also share long term sustainability and resilience. By focusing on their overlapping Late Hallstatt settlement phases (6th-5th centuries BC), we aim to compare and contrast their construction technologies, building layouts and distributions of artefacts. In doing so, we seek to reconstruct distinct communal identities and identify social differentiation among the inhabitants at the two neighbouring settlements.

4 THE GROUP IDENTITY ISSUE OF PRIGORJE IN THE EARLY IRON AGE

Abstract author(s): Šejic, Laura (University of Zagreb, Faculty of Humanities and Social Sciences, Department of Archaeology, PhD student) - Mavrovic Mokos, Janja (University of Zagreb, Faculty of Humanities and Social Sciences, Department of Archaeology)

Abstract format: Oral

Prigorje is a geographical subdivision in the north-western part of Croatia, stretching from today's border with Slovenia, across the southern slopes of Medvednica mountain and in the east to the Moslavina region. This area is dominated by the Sutla River and the Sava River as the main artery of prehistoric trade from the south-eastern Alps to the Danube. In addition to the mentioned rivers, numerous natural wood and ore sources on Medvednica form an extremely suitable area for settlement. It is assumed that Prigorje intensively participated in the exchange of ideas and goods in prehistoric times, especially during the Iron Age.

Although little is known about the Iron Age in this area, systematic archaeological excavations and field surveys have confirmed the existence of four Early Iron Age sites – Sveti Križ, Podsused-Kamenolom, Gornji Grad and Kuzelin. According to the material remains, settlement patterns and burial customs, all four mentioned sites belong to the Hallstatt culture and are characterised by important strategic positions that controlled the surrounding area and the assumed communication routes. Considering that the sites are located in an area where no Hallstatt cultural group is defined, we cannot say with certainty which cultural group the sites belong to, although many influences are visible from neighbouring regions. The site Sveti Križ particularly testifies to the intense communication between the area of Prigorje and the Dolenjska Group.

However, Prigorje remains “the area between defined cultural groups”, which creates an issue of group identity in the Early Iron Age. We would like to present and discuss the mentioned sites and the archaeological material that links Prigorje to the south-eastern Alpine region and the Pannonian Plain. Wider research of this area within the TRANS RIVERS project should clarify a new understanding of the Early Iron Age group identity in north-western Croatia.

5 STONE PENDANTS OF SOUTHERN PANNONIA - SIGNS OF CHANGE AND TRANSFORMATION

Abstract author(s): Potrebica, Hrvoje (University of Zagreb, Faculty of Humanities and Social Sciences, Department of Archaeology; Center for Prehistoric Research)

Abstract format: Oral

Syrmian group is the name given to communities which emerged in the area of eastern Transdanubia in Hungary and eastern Slavonia in Croatia between the late 6th century and early 4th century BC. The group developed over an area previously culturally defined by various Eastern Hallstatt groups as well as the Dalj group. The most important characteristics of this group is a break with previous Early Iron Age traditions, development of certain new common features (primarily in the female costume), and a switch to flat inhumation graves after the abrupt disappearance of cremation burials under tumuli in the mid-6th century BC. The paper will discuss universal signs of identity at the level of the so-called Syrmian group. The case of stone pendants is presented as an example, because they are part of the female costume which is the most distinctive feature of the Syrmian Group, and have no intrinsic or functional value other than their symbolic content. Furthermore, the paper will discuss the distribution and chronology of these objects, as well as their contextual position within each costume and demonstrate that the area encompassed by this universal form of identity is larger than previously thought. This new identity was formed in the liminal area of three different cultural circles, and incorporated communities which, in the Early Iron Age, belonged to rather distinctive cultural groups. This phenomenon could also reflect a change in the relationship between the individual and general identity, which deeply influenced this area, departing from the separate, individual Early Iron Age traditions and setting the stage for the La Tène culture which was to follow.

6 THE NORTH-EASTERN PROVINCE OF THE HALLSTATT CULTURE ON THE EXAMPLE OF TEXTILE FINDS

Abstract author(s): Slomska-Bolonek, Joanna (Institute of Archaeology and Ethnology of the Polish Academy of Sciences)

Abstract format: Oral

The field research carried out in Poland in recent years clearly have indicated the need to redefine the social relations prevailing in the lands located north of the Alps in the Early Iron Age. They made it possible to capture an anomaly within south-western Poland - area settled by the local population of the Lusatian culture which appeared to be of a different character than other regions. The transformation of the local population took place here as a result of direct contact with the dominant cultural centres of Europe at that time. There were clear changes within the social structure, manifested in funeral customs which were a copy of the burial rites of the Hallstatt culture. A hitherto unknown local aristocracy appeared here, importing luxury materials from distant Alpine and Mediterranean areas. The above premises allowed to make an argument and maintain thesis about development on this area regional province, the north-eastern group of the Hallstatt culture.

Is it possible to see the direct influences of the Hallstatt population when analyzing the remains of weaving products? Definitely yes. Textiles of a clearly higher quality of workmanship than in other parts of the country were found here. They are made of very good quality wool yarn, with a thickness of 0.20-0.30 mm. Thus, these were extremely delicate textiles, the density of which clearly exceeded 20 threads per 1 cm. What is particularly important, dyed yarns, selvages, sprangs, plaited bands and fabrics made in a 2/2 twill weave were also recognized here. All of them are among the oldest finds in their categories that have been discovered in Poland. Thus, they were a clear example of new ideas and skills that reached the area of south-western Poland through the arrival of people of the Hallstatt culture.

7 DEVELOPING A RESEARCH QUESTIONS FOR ORA ACROSS EUROPEAN ARCHAEOLOGICAL SITES: A CASE STUDY IN IRON AGE CROATIA

Abstract author(s): Drahotusky-Bruketa, Luka - Ovčarić, Franka (Department of archaeology, The Faculty of Humanities and Social Sciences, Zagreb)

Abstract format: Oral

The starting point of an ORA study is defining a clear research question. The question can relate to diet, resource use, settlement patterns, trade networks, technology, etc. The main goal is to complement the study of fatty substances in ceramic vessels and understand how they were transformed, stored and consumed by relating them to the shapes of vessels and their location inside the settlements. A well-constructed sampling strategy can help refine research questions into hypotheses and contribute to the aims and objectives of the project.

However, besides the search for the “usual suspects” of the extent of consumption and processing of foodstuffs, spatial and temporal questions about the site itself can be questioned as well. Intra-site variability can be observed when samples selected from several different buildings or contexts are selected across both temporal and spatial scales.

In an archaeological project involving ORA, the first step is to determine clear research questions that ORA can help answer. These can relate to issues like diet, settlement patterns, trade networks, and technology. Research questions can also be multifaceted, examining the function and form of vessels in addition to the commodities stored or processed in them. Intra-site variability can also be studied through selecting samples from different buildings. The relationship between commodity and vessel characteristics can also be examined. The aim is to understand how organic products were transformed, stored, and consumed by relating the study of fatty substances in ceramic vessels to the shapes of vessels and their location in settlements. The research questions can be refined into hypotheses and tested through appropriate sampling strategies and techniques.

The development of research questions for ORA at the site level can be evaluated by comparing research questions from various sites in Europe, including the IronFoodTexMet project in Croatia.

8 FIRST FIBRE INVESTIGATION OF MINERALISED TEXTILES FROM IRON AGE BALKANS USING SCANNING ELECTRON MICROSCOPY

Abstract author(s): Gleba, Margarita (University of Padua)

Abstract format: Oral

Within the scope of the project IronFoodTexMet (“Creation of European Identities – Food, Textiles and Metals in the Iron Age Between Alps, Pannonia and Balkans”), funded by the Croatian Science Foundation, more than 60 mineralised textile samples were analysed using conventional textile analytical methods and Scanning Electron Microscopy (SEM). They were predominantly preserved on bronze or iron objects that were excavated from the Iron Age funerary contexts in Slovenia, Croatia, Bosnia and Serbia. Despite the often poor preservation of textiles, SEM permitted identification of raw material in most cases. The materials identified include plant bast fibres (in some cases identified to species level as flax), and sheep wool. Wool quality analysis using the established procedure of measuring the diameter of over 100 fibres, furthermore showed inter and intra site variation in wool fineness, suggesting that different varieties of sheep were used in textile production in the Iron Age Balkans. These data provide, for the first time, information regarding the raw materials used to produce textiles in the area, adding an important new dimension to our understanding of cloth as an element of local and regional identity. The paper presents the new results of fibre investigation and sets them in the broader context of Iron Age Central and Eastern Mediterranean regions.

714 REPOSITORIES AND DATASETS AS OPERATIONAL TOOLS IN COUNTERING THE ILLICIT TRAFFICKING OF CULTURAL GOODS

Session theme: 3. Heritage Narratives and Representations

Session organisers: Traviglia, Arianna (Italian Institute of Technology) - Mödlinger, Marianne (University of Salzburg) - De Bernardin, Michela (Italian Institute of Technology)

Session format: Round table

In the last twenty years, the massive devastation of archaeological sites, particularly in areas of the Middle East impacted by conflict, has increased public awareness of the dangers of looting and illicit trafficking in cultural heritage. Both European and US legislations now include stronger restrictions for the commercialisation of artworks of dubious origin. Law enforcement agents still struggle, nonetheless, to identify looted objects and connect them to their place of origin.

Databases of stolen objects and provenance research activities have been developed by dedicated units, such as the Carabinieri Command for the Protection of Cultural Heritage in Italy, the French OCBC, and INTERPOL’s Works of Art Unit. The potential of informatics and social network analysis applied to web-scraped content is currently being investigated to track illicit online sales and identify active criminal networks by cross-referencing the objects offered on the art market to those included in such datasets. This technical evolution brings forth the practical need for increased availability of open, searchable repositories of antiquities, such as specific sales archives, museum acquisition archives, private collections catalogues, and other types of datasets.

This session invites short presentations (6 minutes max., Pecha Kucha fashion) dealing with the creation of digital repositories of acquired, sold, or stolen archaeological goods (public and private), as well as research catalogues of specific sets of objects with clear geographic provenience, and beyond. Presentations will be followed by a structured discussion: the roundtable aims to engage the participants in critical dialogue, in order to highlight how to effectively connect these datasets and make them exploitable by law enforcement experts.

The session is organised within the framework of the HE RITHMS project, which aims to create an interoperable digital Platform able to identify organised criminal networks involved in the trade of cultural property, thus providing investigators with valuable intelligence.

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Solheim, Steinar - Sand-Eriksen, Anette (Museum of Cultural History, University of Oslo) - Johannsen, Jens (Aarhus university)

Session format: Regular session

Today, food production faces serious challenges in terms of climate change, shifting weather regimes and soil degradation. Population affects food production directly through changes in agro-ecological conditions and indirectly by affecting growth and distribution of incomes. Archaeological and historical evidence suggests that human action has always played a role in either exacerbating or mitigating climate-driven effects and the available food resources.

The spread of farming was a major driver of social and ecological change in human history. Cultural choices and environmental factors conditioned the introduction and expansion of farming into new regions, and the differences in ecology, vegetation and landscapes led to different cultural trajectories in this process. A variety of strategies for food production has been used across the globe, depending on ecology and crops.

Subsistence based on farming also include the use of wild resources, both terrestrial and marine. The importance of wild resources compared to domesticated species is often under-communicated, however. Human exploitation of wild species could have been related to a variety of tasks and strategies, both seasonal and unique to different ecological settings and landscapes.

The interaction between human population and food production is multifaceted, and equal to modern societies; pre-historic ones were also vulnerable to increased pressure on resources caused by either population growth or environmental factors.

In this session, we want to look into different strategies and varieties for food production. We also want to explore if new (scientific) methods (e.g. isotope analysis of cereals) can challenge traditional views on prehistoric farming practice (manuring vs. slash and burn). We invite papers discussing methods of food production, including the use of wild resources. Papers addressing the social consequence of shifts in food production, the entanglement of population dynamics and food production and/or environmental change and food production are welcome.

ABSTRACTS

1 AGRICULTURE AND FOOD AT TEL KINROT: AN INTERDISCIPLINARY APPROACH

Abstract author(s): Demeulenaere, Eline - Findiklar, Şengül (Institute for Archaeological Sciences, University of Tübingen) - Starkovich, Britt - Riehl, Simone (Senckenberg Centre for Human Evolution and Palaeoenvironment - SHEP; Institute for Archaeological Sciences, University of Tübingen) - Kamlah, Jens (Institute for Biblical Archaeology, University of Tübingen)

Abstract format: Oral

Plant and animal remains are powerful tools for archaeologists to understand the classic nature/culture dichotomy. Relationships between humans and their surrounding environment, especially the cultural aspects of food, are visible in the archaeological record. In that sense, archaeobotany and zooarchaeology are important tools for tackling questions in paleoenvironmental research but also in cultural studies in the past.

Although archaeobotanical and zooarchaeological research in the southern Levant have a long history, there are still regional and chronological gaps in our understanding of ancient agriculture and food production. One of the main reasons for this gap, we suggest, is the lack of multiproxy approaches. The earlier phases of our research have dealt with this problem in other Bronze and Iron Age Levantine sites. Here, we apply such an approach in our case study of Bronze and Iron Age layers at Tel Kinrot, an archaeological site located at the Sea of Galilee in northeast Israel. At Tel Kinrot, we are employing strategic and systematic sampling in order to effectively integrate archaeobotanical and zooarchaeological data.

Our contribution will discuss archaeobotanical and zooarchaeological data from Tel Kinrot, crop and animal husbandry practiced by the Iron Age inhabitants and consider their role in understanding ancient human-environment interactions of this region. The methodological framework of our multiproxy approach will also be discussed.

2 CHANGES IN CROP CULTIVATION DURING THE BRONZE AGE AND THE IRON AGE IN SOUTHEASTERN BALTIC: A CASE STUDY OF KERNAVĖ

Abstract author(s): Minkevicius, Karolis - Vėlius, Gintautas - Vengalis, Rokas - Piličiauskienė, Giedrė - Pilkauskas, Mindaugas (Vilnius University, Department of Archaeology)

Abstract format: Oral

The past decade has witnessed major advancements in the study of prehistoric agriculture in the southeastern Baltic. The deconstruction of the concept of subneolithic farming, examination of the Late Bronze Age and Roman Iron Age agricultural transitions alongside other advances have expanded our understanding of the evolution of farming in northern Europe. However, some of the more complex issues, i.e. the nature and evolution of agricultural systems, are still underexplored.

The scarcity of rich archaeobotanical assemblages from long-term sites with coupled an overall the lack of excavated certain period settlements makes such tasks particularly challenging. Still, a few sites present opportunities to explore these issues in greater detail. One such example is Kernavė - a UNESCO world heritage site in eastern Lithuania. It was continuously inhabited from the final Paleolithic until the Late Medieval period and was left undisturbed by modern agricultural activity and urban development due to its exceptional status. An ongoing research project at this site is aimed at addressing these very questions. It seeks to reconstruct the functional development of the archaeological complex over the span of ca. 2 500 years.

Archaeobotanical assemblages collected over several decades alongside some of the more recent samples reveal the long and complex history of agricultural activity at the site. The material presents evidence for the first agricultural activity starting as early as the Late Bronze age, suggests the existence of permanent field cultivation instead of a slash-and-burn agriculture, reveals a sharp increase in both agricultural and social activity towards the end of the 1st millennium AD, and provides insights into a more complex agricultural strategies of the Iron Age and Medieval Europe.

3 SUBSISTING ON THE EDGE: FAUNAL AND ISOTOPIC EVIDENCE REFLECTING SUBSISTENCE STRATEGIES EMPLOYED AT THE KNOWE OF SWANDRO IN ROUSAY, ORKNEY

Abstract author(s): Koon, Hannah - Bond, Julie (School of Archaeological and Forensic Sciences, University of Bradford)

Abstract format: Oral

The Knowe of Swandro is situated on the edge of a windswept and boulder strewn beach on the small island of Rousay. The site has a long chronology with successive occupancy and is dominated by an Iron Age settlement. Due to ongoing severe coastal erosion the archaeological features at the site have become truncated. However, careful excavation and sampling of these deposits means it is possible to explore the sequential changing subsistence strategies at the site. Through analysis of the faunal material this paper will discuss animal husbandry practises and the exploitation of marine resources as well as wild mammal and bird species. We will argue that when living in such an isolated location an over-reliance on a narrow range of protein sources is risky and thus a greater and more varied range of animals had to be exploited to ensure long-term survival of the inhabitants of Swandro. We will also consider the best approach to creating an isotopic faunal baseline that truly reflects the diet at a site with such varied exploitation of animal protein.

4 BUILDING THE BIGGER PICTURE: BOG BUTTER AND FARMING IN PREHISTORIC IRELAND

Abstract author(s): O'Toole, Karen (University College Dublin)

Abstract format: Oral

Bog butter is among the most common finds recovered from Irish peatlands and represents the unique survival of an agricultural product. The practice of its deposition extends from the early Bronze Age to the early modern period and the application of organic residue analysis and aDNA studies have revolutionised our understanding of the phenomenon. Combined with the assemblage-wide archival and geospatial research carried out by the present author, these have provided enormous insights into past diets, food storage, subsistence practices and society during this time. In particular, the study of bog butter raises interesting questions around farming practices in Bronze Age and Iron Age Ireland in relation to scale, strategy, and security. This presentation will focus on the results of this research, demonstrating the complexity of dairying practices in Irish prehistory, challenging traditional views of early Irish agriculture and exploring what this tells about society at this point in Irish prehistory.

5 FOODWAYS IN BRONZE AGE IRELAND: SELF-SUFFICIENT HOUSEHOLDS OR COMMUNAL COOPERATION?

Abstract author(s): Cleary, Kerri (University College Dublin; Archaeological Consultancy Services Unit)

Abstract format: Oral

More than 300 Bronze Age (c. 2200–800 BC) settlement sites are currently known across the island of Ireland, but associated studies of agricultural practices and foodways remain sparse. This is currently being addressed by a new project, FOODSEC: Food Security in Bronze Age Ireland, which is examining food remains and food storage facilities to explore how society managed the challenges of achieving food security. This presentation will focus on one aspect of that project: what can a reassessment of the surviving archaeological remains (e.g. storage pits, above-ground structures, plants and animals) and artefact assemblages (e.g. pottery, grinding stones) tell us about a household's food? Key case studies will be used to explore how a settlement's relationship with food might have changed over time. This will include recent organic residue analysis on pottery vessels from Corrstown, Co. Londonderry/Derry, which as yet represents the largest collection of domestic Bronze Age pottery (449 vessels) from a single site in Ireland. From its production, consumption, storage and management, to its social and symbolic value, what can the archaeological evidence for food tell us about a household's responses to shortage and surplus, seasonal cycles and social change? Furthermore, can this data be used to indicate fluctuations between self-sufficient practices and a reliance on communal cooperation?

724 ARCHAEO-RIDDLE: THE ULTIMATE CHALLENGE

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Cortell-Nicolau, Alfredo - Carrignon, Simon - Crema, Enrico (McDonald Institute for Archaeological Research, University of Cambridge) - Rubio-Castillo, Xavi (Universitat de Barcelona)

Session format: Workshop

Archaeo-riddle is a collaborative project aiming to evaluate the robustness of archaeological inference through the quantitative analyses of a simulated, virtual archaeological dataset. The project started with the creation of a virtual world (called Rabbithole) where a population of farmers (the Poppychewers) expands and replaces an incumbent population of hunter-gatherers (the Rabbitskinners) while generating a virtual archaeological dataset.

This replacement process follows a set of rules and parameters which are known only by the organisers of the session. The project has been thought of as a game, but also an opportunity for international collaboration to understand the robustness and the inferential power of different current theoretical and methodological approaches under a controlled environment.

The goal of the game is for archaeologists to propose their own methodological solutions to answer specific questions about how the farming population replaced the hunter-gatherers in the simulated world. These questions are available on the website of the project.

The game has already been launched in this year's annual meeting of the Computational Archaeologists Association. Researchers can download the dataset through the website and explore it using their own methods until June 2023 when they will have to submit their answers to the question with the scripts and tools they developed and used to reach these answers. Before this final stage, the project will be presented in other scientific meetings and engaging audio-visual content will be advertised on social media, to enhance participation. This workshop will mark the end of the project, where the selected participants will be able to showcase their solutions, and discuss them. Finally, out of this workshop, a publication will be prepared with all the interested participants, which intends to be both an assessment of current archaeological methods and an open declaration of support to collaborative work.

725 ISLANDS, MONASTERIES AND WATER

Session theme: 5. (Extreme) Environments – Islands, Coasts, Margins, Centres

Session organisers: Hueglin, Sophie (University of Tuebingen) - Petts, David (Durham University)

Session format: Session with precirculated papers

This year Mont Saint-Michel in Normandy is celebrating the 1000-year anniversary of the foundation of its Romanesque Abbey and in 2024 the monastic island of Reichenau in Lake Constance anticipates the 1300-year anniversary of its legendary foundation. As UNESCO world heritage sites, they are paradigmatic examples of medieval monasticism on islands. Their situation represents both landscape types: an island in the sea surrounded by salt water and an island in a lake or river surrounded by fresh water.

There are many more landscapes of island monasteries across Europe and the World that we would like to explore in this session. While focusing on Christian monasteries on islands in Europe, contributions are welcome that examine

the phenomenon of spiritual communities on islands in other world regions and religions as well as in other periods. Of special interest will be the role of water as a material or spiritual resource for island monasteries. This might become evident in their choice, use and transformation of watery landscapes, in the way they manage water within their precincts but maybe also in the diet of their inhabitants.

Continuing from Budapest, this year in Belfast, we welcome pre-circulated papers by authors who would like to contribute to an edited volume on “Islands, Monasteries and Water” which is planned as open access publication for 2024.

ABSTRACTS

1 FROM AVALON AND ATHOS TO THE SKELLIGS AND SRI LANKA – ISLANDS AS MONASTIC LANDSCAPES

Abstract author(s): Hueglin, Sophie (University of Tuebingen)

Abstract format: Oral

Across periods, across religions, and across the world, islands are sites and symbols of monastic life. They create a third space where humans can be isolated and at the same time well-connected, alone and in a community. While the island monastery distances itself from the mainland world, its aspect will be duplicated on the water surface, and it can be seen, and its bells be heard from far away (Meier 2009). Islands have the potential to build a bridge between this and the otherworld; they offer a suspended space between life and death. Nüllen (2021) describes islands as uninhabitable, hostile, and uncultivated terrain before Christian conversion turns them into a paradisaical place even a heaven on earth. Saints and monks tame the tempest and reorder the insular space until they return and mission the mainland.

Contradictory characteristics and conflicting concepts seem to surround islands and monastic life where this hybrid geosphere serves a secluded lifestyle. Europe and Christianity offer a great variety of situations of single sites (e.g. Mont Saint Michel, Mount Athos) or whole monastic island land- and waterscapes (e.g. Lake Constance, Ireland or the Dalmatian Islands). Case studies of Buddhist and Hindu island monasteries in Sri Lanka and India will be included to make an attempt to widen the horizon and study the phenomenon on a global scale. Islands, monasteries, and water are entangled human actor-networks with elements of nature or to say it with Zygmunt Bauman (2005) “Liquid Life” on liminal land.

2 MEDIEVAL UNDERWATER REMAINS AND WATER LEVELS AROUND REICHENAU ISLAND IN LAKE CONSTANCE

Abstract author(s): Blazek, Tristan (University of Tübingen)

Abstract format: Oral

Reichenau Island is one of the most important early medieval monastic sites. In 2000, it has been declared an UNESCO World Heritage site. Located in Lake Constance in SW-Germany, close to the borders to Switzerland and Austria, the 8th century island monastery with its three churches has been the focus of historical research and archaeological investigations. Many of the underwater features, some of which have only recently been discovered, have not yet been systematically dated and investigated, especially in connection with historical water levels.

Once plotted, dated, and seen in context with the 1707 plan of the island, the underwater remains are likely to provide a better picture of the usage of the lake as for example a waterway, food source or waste deposit. The simulation of different water levels can contribute to a new understanding of the coastline changes and the accessibility of different parts of the island. This will also allow to anticipate changes connected with climate change. The extremely high temperatures of Summer 2022 led to a very low water level which exposed even more – normally underwater – features which were documented by aerial photography.

This project aims to widen the attention from the island with the monasteries to the surrounding lake with its underwater landscape. This will lead to recommendations how UNESCO and the regional heritage and landscape management authorities should not only protect underwater traces of historic lake use but also enable the continuation of lived traditions on Lake Constance.

3 THE BELOVED ISLAND –A STUDY OF A MONASTERY ON AN ARTIFICIAL ISLAND.

Abstract author(s): Mollerup, Lene (Museum Skanderborg)

Abstract format: Oral

For the Cistercian monks who settled at Øm Abbey, Denmark in 1172, it had been a long and troublesome journey from the time they left the motherhouse seven years earlier, and until they settled at Øm.

With three failed monastic foundations behind them, they settled on a narrow strip of land between two freshwater lakes. From the surviving chronicle, we know in detail about the monastic foundation. Here the monks wrote, “They came to a place called Øm, surrounded on all sides by water and swamp, and they found there near the forest between two lakes, Gudensø and Mossø, a place overgrown with shrubs, and which seemed to them suitable. If only it had not been lacking in water for the various needs of the monastery”. One of the first things they did, when they arrived, was to create canals across the isthmus and thus creating an artificial island. They named the monastery ‘Cara Insula’ – meaning ‘The Beloved Island’. But why was it necessary for the monastery to create an artificial island, and furthermore, why invest labour and economic resources in the construction of several canals? This presentation discusses different theories as to why the monks found it necessary to place the monastery on an artificial island.

4 BUILDING ISOLATION AND CONNECTION: TRACING MONASTIC USE OF CRANNOGS IN MEDIEVAL SCOTLAND

Abstract author(s): Stratigos, Michael (University of York) - Noble, Gordon (University of Aberdeen)

Abstract format: Oral

Artificial islands known as ‘crannogs’ were a common feature of the medieval settlement landscape in Scotland and Ireland. In Ireland, there is extensive evidence for the use of crannogs as dwellings for lay and ecclesiastic elite from at least AD 600 until the post-medieval period with specific documentary association between Christian clergy, including monks, and crannogs. In Scotland, there is much less direct evidence especially before AD 1200, with most crannog investigations focusing to date on their Iron Age (800 BC-AD 400) origins in Scotland. What medieval ecclesiastic evidence there is comes from just a few excavated sites, a scattered record of antiquarian excavations, limited radiocarbon dates, stray finds, high and late-medieval ecclesiastic use, place names and local legendary associations. This paper reviews the available data on the presence and use of medieval crannogs in Scotland as ecclesiastic, particularly monastic, settlement. Foundational questions on where, when and how crannogs were adopted across the country by monastic and ecclesiastic elite will be addressed through exploring key case study examples with a view to understanding how the artificiality of these islets was (un)important to the Christian communities who used them.

5 WELCOME, SEA-PILGRIM? INSTANCES OF LANDING-PLACES, CHAPELS, SPRINGS AND SHRINES AROUND THE ISLE OF MAN

Abstract author(s): Johnson, Andrew (Manx National Heritage)

Abstract format: Oral

Over 170 medieval chapels are known on the Isle of Man, a small island of 580km² lying in the northern half of the Irish Sea: of these, around 40% lie within 1km of the coastline, and include amongst their number two sites which purport to be monastic. Three more monastic sites of 12th- through to 14th-century date are located rather more discreetly 1 to 2km inland and appear to be on already-holy ground.

Accessibility is proving to be an important factor determining both the location of many of these chapels and their continued use through and after the medieval era, in spite of being superseded by a new parochial system of just seventeen parishes in the 12th century.

For the coastal sites, their maritime liminality suggests additional dimensions involving the to-and-fro of tides, the viability of landing places, and the specific curation of particular natural resources. Of direct interest are the identification of places which are capable of providing safe landing sites at particular states of the tide; space above the strandline to beach small open sea-craft; springs and wells for refreshment and cleansing; bedrock suitable for carving; and white quartz pebbles as devotional offerings.

The collation of these criteria provides a growing case for recognizing pilgrimage and the development of local cults. Additionally, this package of attributes also explains in great part the continued significance of this type of site into the 19th century and the particular veneration of a small minority long after the move to a parochial system of worship more than 700 years ago.

6 ISLAND MONASTICISM ON THE NORTH SEA COAST OF BRITAIN

Abstract author(s): Petts, David (Durham University)

Abstract format: Oral

Most discussions of British and Irish island monasticism tend to focus on the rocky coastal seascapes of the ‘frayed Atlantic edge’ of western Scotland and Ireland. This paper aims to shift the balance and instead explores the evidence for island monasteries on North Sea (eastern) coast of Britain. Along many parts of this coast – particularly around the Humber estuary, the Wash and East Anglia, a formerly complex intertidal landscape of tidal fen and marsh has been erased by medieval and post-medieval land drainage and coastal re-alignment. However, it is clear from the archaeological evidence that this region was once home to complex networks of early medieval monastic islands that are now

often entirely land-locked and situated well inland from the modern coastline. This paper explores the practical and symbolic dimensions of this North Sea islandscape, examining the economic affordances such locations presented, but also unpicking the complex social and symbolic dimensions of inhabiting islands in marsh, fen and sandflats.

7 **TRANSFORMING THE SOUL, TRANSFORMING THE LANDSCAPE. THE POTENTIAL OF GEOARCHAEOLOGY TO EXPLORE SYMBOLIC, PERFORMATIVE, AND ECONOMIC LANDSCAPES OF ISLAND MONASTERIES**

Abstract author(s): Kahlenberg, Raphael - Milek, Karen - Petts, David (Durham University, Department of Archaeology)

Abstract format: Oral

Europe's island monasteries are often seen as the closest approximation of the Desert Fathers' arid retreats in the temperate climate zone. Colonising the wilderness and subsequent domestication of the landscape by monks and nuns are common motives in late antique and early medieval religious writings. Examples of the relationship between spiritual growth and transforming the environment can be seen in the reclamation of a patch of land by St Antony on his Inner Mountain, or in St. Cuthbert's efforts to grow cereals on Inner Farne in North East England.

Despite critical re-examinations of the factors influencing the location choice for early monastic foundations in Europe, such as trading routes, relationships to secular power centres, and the perception of islands in pagan societies, there has been limited research on the subsequent transformation of these sites by monastic communities.

This paper argues that geoarchaeological research of monastic islands can deepen our understanding of how the concept of the desert and its reclamation materialised in Western and Central Europe, the construction of performative space around the monasteries, and the question of self-sufficiency of their communities. It draws on previous studies, as well as recent geoarchaeological research on Holy Island, the site of the influential early medieval monastery Lindisfarne.

727 **CENTURIATED LANDSCAPES BEYOND THE WESTERN MEDITERRANEAN: ROMAN IMPACTS ON LANDSCAPE EVOLUTION**

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: de Haas, Tymon (University of Groningen) - Bődöcs, András (Eötvös Loránd University)

Session format: Regular session

The impacts of Roman conquest on provincial landscapes were diverse: they range from the settling of colonist farmers and the re-organisation of pre-existing settlement systems to the introduction of new crops, animals and agricultural strategies and the laying out of road and hydrological infrastructure. One particularly transformative element of Roman interventions in rural landscapes are cadastral systems, generally referred to as centuriations. These centuriations are particularly well-known in the central and western Mediterranean area (Italy, France and the Iberian peninsula) where long traditions of topographic and, more recently, integrated interdisciplinary approaches have been developed to both reconstruct these systems and to assess their chronology, functions, impact on settlement and land use, and ultimately their role in the long-term evolution of the landscape.

While traces of centuriations have been found in many other parts of the Roman Empire (from Britannia to Achaia and from Pannonia to Africa) dedicated research in these areas is much more rare and in terms of theoretical frameworks and methodological toolboxes more fragmentary. This significantly hinders our understanding of centuriation as a global phenomenon that not only transformed landscapes in the Roman World and shapes our conception of the Roman provinces, but also contributed significantly to the subsequent evolution of landscapes throughout the Mediterranean and beyond.

This session proposes to bring together scholars working on centuriated landscapes, with the aim to discuss the status quo of centuriation research (including current theoretical frameworks and approaches) in different parts of the Roman Empire, thus building towards a more cohesive research community and a new synthetic perspectives on the phenomenon of centuriation. We particularly welcome papers that frame current work (case studies) within a broader regional and/or theoretical framework. We aim to publish a selection of such regional synthetic contributions as an edited volume.

1 ROMAN CENTURIATION IN CORINTH AND BEYOND

Abstract author(s): Romano, David (University of Arizona)

Abstract format: Oral

Evidence of Roman landscape planning, centuriation, in Achaea has been discussed by a number of scholars over the past thirty years or so. These examples are primarily located in the territoria of major Roman colonies, including Corinth, Patras and Dyme. My own work at Corinth has demonstrated that the extents of the Roman landscape planning goes beyond the immediate area of the urban area of the city to include large extents of the province of the Corinthia. This suggests to me that the work of the Roman agrimensores in Achaea may be far greater than is generally acknowledged and that it is likely that there are more examples of Roman land planning to be discovered. There are of course additional Roman cities in the provinces of Macedonia and Epirus. I discuss the extents of Roman centuriation in and around Corinth, including the isthmus and the greater area of the Corinthia and propose a number of areas of the Peloponnesos where it is likely that further examples of Roman land planning may be discovered. I include a summary of the methodologies that I have utilized in my own research and the techniques developed as well as some of the difficulties of centuriation research in general.

2 RESEARCH OBJECTIVITIES IN THE CENTURIATED LANSCAPE OF COLONIA CLAUDIA SAVARIA

Abstract author(s): Bődöcs, András (Eötvös Loránd Tudományegyetem)

Abstract format: Oral

The Roman colony of Savaria was the first founded town in Pannonia (colonia Claudia Savaria). Inscriptions attest the so-called deductio, the settlement of veterans. The first reconstruction of the centuriatio of Savaria was made by András Mócsy, who attempted to draw it using medium-scale topographic maps. Since his publication, no substantial archaeological attempt has been made in the last 40 years to verify his theory. In the last decade, research into the existence of the Savarian centuriatio has been pursued using GIS methods. Fortunately, we have found a correlation between the results of some archaeological excavations and the information of aerial archaeological phenomena, and we have managed to build a predictive model-network for the centuriatio. The new network is completely different from the previous reconstruction. We have collected hundreds of archival aerial photographs from the 1950s and 1980s, and we have also carried out test flights for aerial archaeological reconnaissance to verify the new theory.

The model has been continuously refined and validated by archaeological fieldwork and geophysical survey. The new reconstruction has led to new possibilities for interpreting the sites excavated in recent decades and the previously known Roman roads and aqueducts.

Another interesting correlation between the watercourses running through the former colonia and the Roman centuriatio was also detected: the impact of Roman agriculture on the landscape transformation that has survived to the present day. Our pilot project, launched this year, plans to verify these effects with multispectral drone surveys and geophysical measurements to show whether there were former streams along the presumed Roman channels that could provide evidence to support this hypothesis.

3 A ROMAN LAND DIVISION IN NORTHERN GAUL, PART OF A LARGER PROJECT?

Abstract author(s): Vermeiren, Luc (Catholic university Leuven)

Abstract format: Oral

In 1958, J. Mertens questioned whether the scarce and fragmentary traces of Roman land division in Gallia Belgica indicated a centuriated landscape with a similar orientation.

An archaeomorphological approach frames the landscape as a relict of a trajectory of human interventions. The nature and chronology of traces relative to each other and their resistance to dateable changes in the landscape allows to discern a comparably oriented structure, possibly pointing to a Roman land division operation, called centuriatio.

In methodological terms, an UTM projection was applied with Qgis to Google Maps. Georeferenced (old) maps were used to select and document sequences of changes. Using this framework, we propose to reconstruct a centuriatio in Lebbeke, formerly located in the Civitas Nerviorum.

Traces of Gallo-Roman land division with a terminus ante quem of 100 CE in the controlled context of a nearby archaeological excavation confirmed the location, orientation and Roman dimensions of this centuriatio.

In a next step, we used these elements to construct a working-grid with Roman characteristics considered to have measured 20 by 20 actus, the cardo oriented at -31.095°.

The grid was plotted over Gallia Belgica in order to find out how far it hypothetically extended. This resulted in a large number of observations of both archaeomorphological and archaeological nature which validated the grid in its ori-

entation, location and dimensions in Belgium, the western parts of Germany, the Netherlands, northern France, and Luxembourg.

Such encompassing instrument of Roman imperialism with a standard size of 709.68 meters are documented in the Caesarian/Augustan period, to which a range of other indications also leads.

Is the implementation we propose in this paper a result of the imperial order of 44 BCE to survey the entire empire, as mentioned in the *Cosmographia*?

4 **BUILDING UP THE FIELDS: CENTURIATIO AND GEOARCHAEOLOGY IN THE AGER OF ILICI (ELCHE, SPAIN)**

Abstract author(s): Narbarte Hernández, Josu (University of the Basque Country; Aranzadi Science Society) - Iriarte, Eneko (University of Burgos) - Olesti Vila, Oriol (Universitat Autònoma de Barcelona)

Abstract format: Oral

Ilici (nowadays “La Alcludia”, Elche) was a Roman colony founded during the second half of the 1st c. BC, displacing the Iberian population that occupied that area from the 6th c. BC. It was founded through the centuriatio system (20 x 20 actus), very well preserved in the current landscape. This centuriatio is also confirmed by a bronze tabula (Sortitio), where 10 colonist received their plot of land (Olesti-Mayer 2001). From 2017, our team has developed a geoarchaeological approach in the colonial ager, where we tried to identify the changes in the agrarian system due to the new agrarian structure. Following the methodology developed by Eneko Iriarte and his team, six surveys, and their analysis (XRF-CS, ACP, sedimentology), were carried out. Some of the first results have identified the agricultural soils from the Roman period, but also the process of building up of these fields in a colluvial area, confirming the role of the centuriatio as a tool for the territorial management.

5 **ARCHAEOLOGICAL SURVEY, CENTURIATED NETWORKS AND THE SHAPING OF CULTURAL LANDSCAPES: A CASE STUDY IN THE HINTERLAND OF EMPORION-EMPORIAE (NORTH-EASTERN CATALONIA)**

Abstract author(s): Palet, Josep Maria - Carbonell, Arnau - Garcia-Molsosa, Arnau (Institut Català d'Arqueologia Clàssica - ICAC) - Rodrigo, Esther (Departament de Ciències de l'Antiguitat i de l'Edat Mitjana, Universitat Autònoma de Barcelona) - Ejarque, Ana (ISEM, Univ Montpellier, CNRS, IRD) - Mayoral, Alfredo (Institut Català d'Arqueologia Clàssica - ICAC; Université Clermont Auvergne, CNRS, GEOLAB, F-63000) - Orengo, Hèctor A. (Institut Català d'Arqueologia Clàssica - ICAC; Catalan Institution for Research and Advanced Studies - ICREA)

Abstract format: Oral

Current researches on centuriated landscapes are based on diachronical and interdisciplinary approaches. They include photointerpretation, archaeomorphological survey, geoarchaeology, palaeoenvironmental analyses or the study of old maps and written documents, which can offer important insights on the effects a centuriation had on the landscape. Environmental data show a complex relationship between Roman field systems, settlement and landscape change. Landscape analysis can provide enormous cultural assets in the form of cultural landscapes. These new perspectives are presented by assessing a case-study located in the ancient city of Emporion-Emporiae (Empúries) in the Empordà's littoral plain. The area is a highly diverse and dynamic littoral ecosystem subjected to sea influence and fluvial flooding contributing to the formation of beach-barriers, marshes and lagoons and, ultimately, the plain in-filling. Centuriated networks stress the existence of a remarkable landscape organisation of this area, which are also characterised by both, a complex settlement evolution and land-use systems. Paleocological data shows the remarkable imprint of the Roman occupation in the littoral plain, with the removal of littoral woodlands and the expansion of wet pastures and cultivation lands in an increasingly drained floodplain. These methods have allowed moving beyond the pure description of the traces and exploring the concepts behind the making of a centuriated landscape. Recent interpretations move from economic or materialistic approaches to more social and cultural focused explanations. The high impact of centuriations makes them visible in modern land arrangements and defines them as an outstanding evidence of Roman impact in the shaping of present-day cultural landscapes.

6 **AGER IN AFRICA FROM 146 TO 63 BC**

Abstract author(s): Kim, Yeong-chei (Seoul National University)

Abstract format: Oral

Scholars have generally underestimated the level of Roman activities in Africa before the foundation of Caesarian and Augustan colonies, and the land in Africa which the Romans annexed following the destruction of Carthage in 146 BC has been conventionally called public land (ager publicus), although the term ager publicus in Africa is not attested in the epigraphic *lex agraria* dated to 111 BC. While reviewing the massive centuriation systems identified in

modern day Tunisia, this paper analyses agrarian laws relevant to African land from the period between the annexation of Carthage in 146 BC and Servilius Rullus' agrarian proposal in 63 BC, thereby including the Gracchan lex Rubria of 123 or 122 BC and Saturninus' agrarian law in 103 BC. By examining the Roman management and use of the former Carthaginian territory in this period, this paper argues that private ownership steadily developed in Africa in the late second century BC out of the land annexed in 146 BC, and that what was a single legal category of ager in Africa as in the agrarian law of 111 BC was divided into two categories: one of private land and the other of land which remained public land of the Roman people.

7 OVER THE LIMIT. ROMAN AGRARIAN ORGANISATION IN SOUTHERN NUMIDIA

Abstract author(s): Turchetto, Jacopo - Meleri, Andrea - Zanovello, Paola (University of Padova)

Abstract format: Oral

Unlike what happened in relation to the Tunisian and northernmost Algerian districts, the territorial organization of the Numidian sector, located to the south of the Aurès massif (Jibāl al-Awrās) in the province of Biskra (Algeria), has not recently been the subject of specific research. It is a frontier area stretched along the northern edge of the Sahara, crossed by caravan routes which connected the Central-African supply areas with the Mediterranean coastal strip, and which will then be exploited in Roman times to become the backbone of the road network of the North African provinces. Furthermore, although it was a semi-desert territory, the water flowed abundantly from underground springs and aquifers, making this sector very fertile and productive and also acting as an attracting and decisive element in logistic and settlement choices.

It is no coincidence, in fact, that the limes africanus, the southern border of the Empire, ran just behind that sector, and that hydraulic works, systems for collecting water and extensive networks of canalizations were carried out, in support of the territorial organization and agricultural exploitation of that district. Within that framework, territorial infrastructures similar to centuriations also had to be created.

New territorial research in the province of Biskra is moving, among other things, precisely towards a more systematic study of those traces of centuriation, through the analysis of Corona declassified satellite images, multispectral data and field surveys. Specifically, the interest is directed not so much towards a more correct identification of the geometry of the centuriation plot, as towards a better understanding of the cultural characteristics which must have distinguished those agrarian organizations, of their relationship with the defensive line of the limes and, in general terms, with the landscape and the settlement patterns.

8 CENTURIATION, ROMAN EXPANSION AND LANDSCAPE EVOLUTION: TOWARDS A GLOBAL PERSPECTIVE

Abstract author(s): Haas, Tymon (University of Groningen)

Abstract format: Oral

Centuriation, the large-scale geometric re-organization of rural landscapes, is one of the most impressive yet least understood accomplishments of the Romans. The study of these systems has a long and diverse history, and by now at least some three hundred of such these systems are known throughout the Roman world. At the same time, our understanding of this phenomenon beyond the individual case study or region is very limited – despite several attempts at synthetic work (e.g., Clavel-Lévêque & Vignot 1988; Clavel-Lévêque & Orejas 1990; Agri Centuriati 2009). Thus, basic questions about their distribution, functions, chronology and relations to Roman expansion remain unanswered. Departing from an inventory of known centuriations, this paper explores these limitations and proposes a program of comparative research as a means to advance this field of research. with the ultimate aim to further explore the impact of centuriation, both in the context of Roman expansion and the longer-term evolution of landscapes. The potential of such comparative analysis is illustrated on the basis of several examples.

728 URBAN PHENOMENA IN ARCHAEOLOGICAL SITES-ISSUES RELATED TO TRAITS, HOMOGENEITY, DIVERSITY AND SUSTAINABILITY

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Basu, Durga (Department of Archaeology, Calcutta University) - Donnelly, Colm (Queen's University Belfast)

Session format: Regular session

Urban Archaeology is an important element of archaeological studies, dealing with the past material culture, environment and communities of towns and cities. Whilst the definition of urban in relation to rural is contested, urban sites have some distinct traits which vary from region to region, country to country and period to period.

Urban traits can be observed in relation to, for example, evidence for planning, industrial production, commerce, population density and expression through art and architecture. Sometimes all these characteristics are discernable, whilst in other cases one single attribute may be indicative of urban site. Towns and cities perform specialised functions, evidence for which may be taken, contextually, as an urban trait. This session intends to explore variability in these specialized functions between different regions to develop an overview of the variability in urban traits in the past.

The main purpose of this session is to identify the key urban traits evident in the archaeological record and the range of interpretive and methodological issues that these bring to the fore. Papers are welcomed which relate contextually specific urban traits to the challenges of developing strategies for effective urban heritage management.

ABSTRACTS

1 APPROACHING EARLY CITIES: AN ATTRIBUTE-BASED APPROACH TO LATE PREHISTORIC EUROPE

Abstract author(s): Fernández-Götz, Manuel (University of Edinburgh)

Abstract format: Oral

This paper will discuss issues of definitions and functions of early cities, particularly how we can approach the study of large agglomerated settlements from an etic perspective in contexts where written sources are absent or scarce. Following M. E. Smith's approach outlined in 2016 ("How can archaeologists identify early cities?"), published in my edited volume "Eurasia at the Dawn of History: Urbanization and Social Change", I will apply his model of polythetic traits that can potentially be identified archaeologically to the study of late prehistoric megaliths, particularly related to Iron Age Europe. This approach takes into account attributes based on size, social impact/functions, built environment, and social and economic features. In addition to applying the model to some specific case studies, I will argue that we should understand urbanisation as a social process, rather than a final destination, and that approaches should adopt perspectives that are simultaneously contextual and comparative.

2 NEW APPROACHES TO THE URBAN PHENOMENON AT THE END OF THE IRON AGE IN NORTHWESTERN FRANCE

Abstract author(s): Remy, Julie (Chargée de recherche, CNRS, Nantes Université, CReAAH, LARA, UMR 6566) - Le Goff, Elven - Leroux, Gilles (INRAP)

Abstract format: Oral

The last two decades have allowed for a significant renewal of knowledge regarding the urban phenomenon at the end of the Iron Age for a region of Gaul that had long remained outside of these themes. European studies conducted since the 1970s have highlighted a process of urbanization during the Second Iron Age that is illustrated by the early emergence of unfortified settlements in the course of the 3rd and 2nd centuries BC, followed by the development of oppida between the end of the 2nd and beginning of the 1st centuries BC. These elements translate the complexification of the Latin society which is accompanied by an important structuring of the economic and political territories. With the multiplication of studies, the evolution of research testifies to the complexity of the phenomenon with situations that are sometimes diverse and nuanced depending on the geographical sectors and the data acquired. In north-western Gaul, preventive excavations have led to the identification of more than a dozen sites in recent years, making it possible to begin to reason about the spatial organization of occupation, which appears to be systematically dense, but which presents a diversity of forms. In the long term, the collective research program AGGLO (AGGLOMÉRATIONS Laténiennes du Nord-Ouest de la Gaule) aims precisely at characterizing this phenomenon of habitat densification. In a programmed framework, if aerial or geophysical prospection, coupled with documentary assessments have proven effective, for several decades, in identifying potential sites, only excavation allows us to validate the hypotheses.

Agglomerations are not only defined by their own characteristics, be they morphological, social, spatial, material, economic or political, but also through the exchanges and flows that link them. The aim here is also to understand them as active entities within a network.

3 CUI BONO? FUNCTIONS AND INVOLVEMENT OF GUILDS AND ASSOCIATIONS IN THE ROMAN URBANISATION PROCESS

Abstract author(s): Andreeva, Petya (ÖAI/ÖAW)

Abstract format: Oral

The establishment, development and promotion of an extensive urban network was the defining policy of the Roman Empire. The city environment featured a number of key factors in shaping architectural fabrics, organising economic and religious activity, or providing strictly ordered milieu.

One of the significant factors to consider would be the professional collegia and voluntary associations. They were strongly related to the social dynamics and culture contact in the cities and their territories, and therefore to the overall process of Roman urbanisation. Despite their widespread popularity in the Roman provinces, there is still much debate about their precise place and function in the development of urban centres. On the one hand, different kinds of associations provided a social and economic context in which their members managed to integrate into the structures of the civic community. A strong indication of social capital was their participation in public festivals and imperial ceremonies. In turn, the enhanced social function of the associations has been manifested in shaping the urban environment with sanctuaries and temples dedicated to their patron deities, or establishing ties of patronage to the members of urban or even state élite.

Hence, the apparent popularity of collegia might have been a constant factor in changing the social and economic frame of the urban centres. Another relevant question that arises in this context is whether the Roman urbanisation process provided suitable conditions for integration of different associations in the cities, or they were part of the process itself. In turn, the discussion comes to the main question: were the associations an urban characteristic and an important factor involved in a strongly hierarchical urban network? In other words, it is necessary to consider whether they could fit in theories and definitions related to the Roman urbanisation.

4 URBANISM AND ITS CHARACTERISTIC FROM EARLY-HISTORIC TO EARLY-MEDIEVAL PERIOD IN NORTHERN EUROPE AND SOUTH ASIA BY TAKING CHAMPA AS REFERENCE

Abstract author(s): Singha Roy, Arabinda (University of Calcutta)

Abstract format: Oral

Urbanization is a complex process involving certain basic socio-economic changes at the most primitive levels. The urban centres not only represents a distinct development in technology and economy but, in turn, also inaugurate a new social type having almost universal relevance and impact. Thus urbanization is decidedly an indicator of the socio-economic and cultural level of a civilization.

Urbanization in Northern Europe and South Asia had two phases. The Harappan cities in South Asia which emerged in the middle of the 3rd century B.C. collapsed after about six hundred years without leaving any surviving urban centres. In Northern Europe first urban centre emerged in around 6-7th Century BC. It was only after another thousand years or so that towns emerged in in both the continents for the second time. The second phase of urbanization (historical phase in south Asia and middle age in Northern Europe) emerged and flourished in an altogether new socio-economic milieu generated by the widespread use of new technologies and its extension to the field of production. In this phase of south Asian history we have known about different principalities having a capital city. One of which was Champa of Anga territory, one of the famous city in south Asia which has survived with its supremacy since the early historic period to the early medieval period without any evidence of collapse and bring all the characteristic features as well as transformation of urbanization in the south Asia. Similar cities have been found in the Northern part of Europe as well to show continuation of the process of urbanisation without any break or phases.

5 STUCCO AS A CLASSIFIED MATERIAL FOR ANCIENT URBAN BUILDING AND IMAGERIES : A CONNECTING LINK BETWEEN INDIA AND ROMAN WORLD

Abstract author(s): Basu, Durga (Calcutta University)

Abstract format: Oral

Stucco as a building material and a medium for artistic creation is employed in many urban metropolitan cities in Indian Sub-Continent. This material was used right from the beginning of Civilization. In the Indian Sub-continent, the antiquity of stucco goes back to the third millennium B.C.E. when this compound was adopted as a preventive veneer on the structure, by the Harappan people. The available literary and archaeological evidence clearly indicates that in ancient India stucco was used for some specific purpose, besides image making or architectural decoration. Stucco is basically a compound of quick lime and sand. But sometimes Gypsum was added to the compound. In many archaeological sites, stucco was noticed as an essential ingredient for buildings. The existence of stucco either in form of mortar or plaster coating in ancient structures or in the imageries indicates an urban environment and society. Ad-

mittedly from the 1st century C.E. its use as a medium for image-making became very popular in the Gandhara region in the northwestern part of the Indian Sub-continent. Archaeological evidence shows that this region having Hellenistic- Roman elements at its core, became an important centre for stucco art. During the First- second century India had direct contact with the Roman world. Stucco had a long history in the Mediterranean world. Artists working in the Roman world created extensive stucco schemes in both buildings and sculptures. Almost all the classical writers of Imperial Rome mentioned a trail of trade and commercial activity of Rome with India which had perhaps enhanced the effective uses of stucco in India. The paper will deal with the varied use of stucco in both India and Rome.

6 STRATEGIES FOR EFFECTIVE URBAN HERITAGE MANAGEMENT: A COMPARATIVE STUDY OF CASES FROM INDIA & EUROPE

Abstract author(s): Basu, Asmita (Army Institute of Management)

Abstract format: Oral

Traditionally, managing cultural heritage has been the responsibility of the public sector and experts, primarily archaeologists, art historians, architects and conservationists. It has included a method of operation that mainly relates to the monuments and clearly delineated regions with declared historical significance.

Archaeological sites which have been clearly identified as urban sites due to their nature and characteristics require proper heritage management strategies for sustainability.

In the core context, contemporary heritage management is rooted in the rationale of the industrial society and as such, is built on the concept of a powerful public sector and an instrumental rational planning and heritage management, i.e. an expert activity based on apolitical, impartial, and scientific assessments. The transition from an industrial to a knowledge society has significantly altered the environment for urban development planning and heritage management.

Over the last few decades, societal development has been increasingly shaped by economic and cultural globalisation, resulting in competition between cities for external markets (such as investments, visitors, and new residents), as well as a shift in policy and decision-making and implementation process.

This paper aims to highlight the benefits of the application of the principles of Strategic Management for the sustainable development of urban archaeological sites through the case of the Bishnupur temple sites in West Bengal, India in comparison to the strategy application in urban sites in European countries such as Spain and others for a better understanding of the heritage management structure and policies.

7 TRACING THE URBAN PROCESS IN THE LIGHT OF EXCAVATION AT KUNAL, FATEHABAD, HARYANA

Abstract author(s): Bhattacharyya, Banani (Department of Archaeology & Museums, Haryana)

Abstract format: Oral

The identification of the Harappan Civilization in the early twentieth century was considered to be the most significant archaeological discovery in the Indian Subcontinent as it pushed the beginning of settled life by 5000 years. Contemporary to the Mesopotamian and Egyptian Civilizations it was unique in its town planning. Spread over major parts of the western and north-western subcontinent, its influence is seen to the Tajikistan border in the north and the Gulf region in the west with over two thousand sites found till date. The past eight decades of research have brought to light many important details of the culture including the cultural process involving its origin. In this regard position of Kunal is quite interesting. Excavation has revealed the progress towards urbanization from village farming community based life. Kunal a Pre-Harappan site, on the bank of now dried up ancient course of river Saraswati, is located in the Tehsil Ratia, District Fatehabad, Haryana. The core area of the ancient settlement is 3-4 acres though site expands to 9 acres. Excavation process has provided significant traits of Pre-Harappan Culture in our sub-continent at Kunal for the very first time in the history of Harappan studies. Exclusively, the cultural material signifies the habitation of the site back to Pre-Harappan period. Pit Dwellings alongwith hearth marks indicate the early stages before formation/existence of Harappans. There are two cultural phases pre-Harappan and Harappan, To the Harappan period relate the remains of mud-brick structures, platforms, treads and soak pits. All scholars agree on the urban character of the Harappan culture, but opinions differ on the role of the Sarasvati identified with the Hakra—Ghaggar river and also on the identity of the people who created this culture.

8 TRADE ROUTES AND URBAN SITES OF PILAK: HOMOGENEITY, DIVERSITY OTHERS URBAN SITES OF BANGLADESH, BURMA AND JAVA

Abstract author(s): Palit, Projit (Assam University)

Abstract format: Oral

The traders and monks used the trade routes of Surma and Cachar –valley, Lushai hill, Maynamati and Pilak to reach the Burma and Hukawang Valley of China. Traders used the route and invested lot of wealth for making monasteries and urban city for their trade. According to the Arakan (Burma) chronicles, the Magh King Peng used the route and established Pilak as a capital of his kingdom Pleingsa. The site of Pilak is based on the Pancharatha structure and it has five major parts. In the middle it is a structure of circular shape inside and square at outside, surrounded by square cells, the rest of the architectural foundation proceeds in the four directions of South, East, North, and West. On the whole, the entire structure creates a mandala. Constructed entirely out of burned terracotta bricks of different sizes and joined together by fine clay mortar. Bricks are mostly square, rectangular, and sometimes circular with measurements ranging between 15.24cmx10.16cmx6.35cm, 20cmx25cmx5.5cm, and 29cmx18cmx4.5cm. The cruciform structure of Pilak architecture are very closed other similar cruciform architectures of with Paharpur, and Moinamoti of Bangladesh and Ananda temple of Pagan, Central Java (Dieng plateau, Candi shew, Candi kalasan). Interestingly all of these architectures from various places approximately belong to the same time frame and have been built using the same medium. The terracotta relief panels of the Pilak are composed of clay, which upon being fired after completion of the sculptural relief works on its surface, is commonly used as a part of the decoration on the architectural surface of monasteries and temples of Pilak. Treatment-wise and stylistically the panels of Pilak were closer to the panels at Moinamoti monastery, Bangladesh. The artists were either the same individuals or had strong connections among them.

9 EARLY MAJOR URBAN CENTRES IN EASTERN INDIA

Abstract author(s): MITRA, SAYAMTARA (BOLPUR COLLEGE, BOLPUR, BURDWAN UNIVERSITY)

Abstract format: Oral

Recent Archaeological researches reveal adequate data indicating how and when early major urban centres grew in Eastern India.

The city has been variously defined, but its broadly distinguishing features are :

- (1) Its population is denser than in rural areas and confined to a restricted area,
- (2) Only limited part of its area, is utilised for agricultural purposes,
- (3) Its population is predominantly non-agricultural and dependent on rural areas for their source of food and raw materials supply. Hence presence of merchant class fulfilling the necessities of life of the urban citizens.

Thus early urban city broadly functioned as being political and administrative centre, trade and commerce centre and also as a religious centre. On the contrary rural areas where land availability was plentiful, food abundantly available, comparative self-sufficiency obviated the need of merchants class.

In early historical period, Bihar, in eastern India had the potentiality of evolution into cities. The important rivers like Ganga, Gandaka, Kosi, etc. and their tributaries with their banks and adjoining areas, to a large extent, have in course of archaeological excavations revealed the unfolding story of the beginning and successive development of towns and cities in Bihar.

One wonders if archaeological excavations bear silent witness to an evolving early Urban Revolution. Our limited contemporary knowledge on the material transformation of rural habitations into urban ones would tend to indicate this Urban Revolution, if any, was albeit a slow one. But much more in archaeological research is necessary to detect and understand this process.

10 WATER FILTRATION SYSTEM IN AN ANCIENT SITE: SRINGAVERAPURA, A COMPARATIVE STUDY BETWEEN ANCIENT AND MODERN SYSTEM

Abstract author(s): Chatterjee, Anustup (Techno International New Town; NIT, Raipur)

Abstract format: Oral

The primary goals of water treatment plants for over a century have remained the same: produce biologically and chemically safe water that is appealing to consumers, and is noncorrosive and nonscaling. Today, plant design has become very complex due to various factors.

The desire to drink pure and wholesome water dates from ancient times. Early methods of treating foul water were boiling, exposing to the Sun, dipping a hot copper rod repeatedly, and filtration. The earliest water treatment practices

were primarily in batch operations in individual homes. From the sixteenth century onward, centralized treatment facilities for large settlements were realized.

The growth of community water supply systems in India started in the early historic period.

Water from a natural source usually contains many dissolved and suspended solids. Large suspended particles, such as sand, behaving as “discrete” particles can readily be removed by sedimentation or filtration processes but those at the lower end of the size spectrum do not readily settle. These are colloidal particles and can be removed by sedimentation and filtration only after physical and chemical conditioning.

Sringaverapura, identified as an ancient urban site, is located in the district of Allahabad, Uttar Pradesh in eastern India. The ancient site, sprawling, roughly north-south along the left bank of the river Ganges, lies in Singrur region. The excavation in 1977 had continued for three field seasons. The site provides a continuous cultural sequence starting from the end of 2nd Millennium B.C.E to the early medieval times. There are seven Cultural phases of which Pd-IV-B has revealed a massive burnt brick tank consisting of two parts with an elaborate inlet and inter-coming connecting system.

The present paper discusses the water filtration system of the Urban archaeological site of Sringaverapura where the water filtration system developed in first century B.C.E to C.E.

11 TRACING THE URBAN TRAITS IN MEDIEVAL SITE OF GADAG IN SOUTH INDIA

Abstract author(s): Bonu, Debsmita (University of Calcutta)

Abstract format: Oral

Geographical and administrative factors play vital roles in paving the history of an urban centre. The existence of an urban centre is largely related to human society. Urban centres have always played an important role in shaping and transforming society. The major social, economic and political changes in society are more or less responsible for this urban setup only. Thus, an attempt has been made to examine the factors which are responsible for the origin and evolution of urban centres. The present study area, i.e., Gadag district of northern Karnataka came into existence in 1997 when the Dharwar district was bifurcated. Though the district is newly carved in the field of art, literature, culture, spirituality and industry. It has its own heritage as well as legacy. The class-stratified society and concentration of wealth hold already enough provenance of the medieval urbanized Gadag. But an urban centre is always engaged with special functions with regard to the hinterland. Urbanization comparatively develops small and simple communities into specialized central complex societies. From our archaeological viewpoints the parameters frequently applied to situate urbanization are its location, size of settlements, writings, standardized medium of exchange, large representational art, large and heavily embellished structures, and knowledge of science and growth of technology. Finally, trade has been the most important deciding factor which invokes a small town to engage in an urbanized structure which cannot be neglected in this case of the present study area. An effort has been made here to understand if the medieval material culture showed enough maturity when composing the antecedent descendant cultures.

729 EXARC: RECONSTRUCTING PAST NARRATIVES THROUGH EXPERIMENTAL ARCHAEOLOGY

Session theme: 4. People of the Present – Peopling the Past

Session organisers: Fregni, Elpidia Giovanna (Unaffiliated) - Maguire, Rena - O'Neill, Brendan (University College Dublin)

Session format: Regular session

Experimental archaeology can capture the imagination of even the most blasé professional archaeologist. There is a fascination in seeing the material culture of the past re-created, along with associated smells, sounds, touch and taste, making it experiential as much as experimental. In addition experimental archaeology answers vital questions about how objects were made and used, including use-wear studies and collaboration between experienced artisans and archaeological researchers, EXARC's mission is to make the archaeological past widely accessible by creating opportunities for researchers and practitioners to collaborate, exchange information, and share best practices in research and education. This session brings together those aims for like minds who are interested in how experimental/experiential archaeology fuses material culture studies of conventional archaeology with the human story of the past, making it more relatable, as a means of preservation for traditional skills, and for understanding past technology. Talks can address but are not limited to the following topics:

- Best strategies and practices employed for reconstructing or presenting the past to the public
- How real is reconstruction? How close to authenticity is experimental archaeology?
- Reconstruction of material objects: successes and limitations
- Experimental archaeology in the lab and in the field
- The social and spiritual aspects of ancient technologies, putting people at the heart of technology.

1 RECONSIDERING COMBS AND COMB-MAKING IN EARLY MEDIEVAL IRELAND

Abstract author(s): SINES, BILLY (Archaeological Consultancy Services Unit)

Abstract format: Oral

Hair combs are a common find from archaeological contexts dating to Ireland's Early Medieval Period (400-1100 AD). Most combs are composite objects, combining parts made from metal and skeletal material. While the objects they produced may be common, archaeological evidence for the craft of comb-making is not. Outside of Viking contexts such as Dublin, comb-making is often identified by unused components discarded in ditch fills rather than excavated workshops.

To many, the composite design of a comb seems complicated, especially as many view combs as functional, hygiene implements, created solely to remove head lice. Early Irish texts state that comb-making was a low status craft while also mocking and damning the comb-makers. They are low value items, easily disposed of and replaced when broken.

To some, the composite design of a comb appears to be a response to the restrictions caused by their choice of raw materials, demonstrating a high level of craft knowledge. Comb typologies highlight a specific style of comb which is Irish in origin, with possible trade connections to Scotland. Macro and Microscopic analysis has shown that some combs show signs of repair or augmentation, that challenge the idea of them being easily disposed of.

Unfortunately, the results in comb making being overlooked or shrouded in ambiguity, especially when there is little primary evidence for any of the objects suggested as comb-making tools. Using experimental archaeology, the processes required to make a comb can be identified, allowing us to reconsider the craft and challenge the existing assumptions. Experimental archaeology may not give a definitive answer, but it allows us to ask better questions and move away from discussions of dirt and lice and towards concepts of status and identity in Early Medieval Ireland.

2 SEWING WITH SEALSKIN: INVESTIGATING PALEO-INUIT NEEDLE MAKING AND SEWING PRACTICES THROUGH COLLABORATION WITH MODERN INUIT SEAMSTRESSES

Abstract author(s): Siebrecht, Matilda (Groningen University)

Abstract format: Oral

The importance of needles to Paleo-Inuit cultures is well established in Arctic Archaeology, as they were an essential tool in the creation of the warm, waterproof clothing which would have been essential for survival in Arctic environments. A pilot study conducted in 2021 (Siebrecht et al 2021) compared needles from three Dorset Culture sites (c. 800BC - AD1300) in the Foxe Basin (Arctic Canada). The results of this study showed that, although the needles from all sites appeared typologically identical, differences could be observed in a microscopic analysis of traces of manufacture and use. One such result, which had not been considered in previous studies on this topic, was an observed variation in the needle cross-section shapes. The present paper presents the results of a further investigation into this variation, using a combination of experimental archaeology microwear analysis, and - most importantly - collaboration with expert seamstresses from modern Inuit communities. This approach not only allowed a deeper investigation of Dorset needle making and sewing practices than previous typology-focused studies, but also resulted in some fascinating conclusions regarding the use of ethnographic analogy for the investigation of Dorset technologies.

3 IDENTIFYING DISMEMBERMENT BUTCHERY MARKS AND TOOLS IN THE ZOOARCHAEOLOGICAL RECORD: THE EXPERIMENTAL PROCESS

Abstract author(s): Okaluk, Tiffany - Shai, Itzick - Cohen, Haim (Ariel University) - Greenfield, Tina (Cambridge University)

Abstract format: Oral

Butchery analysis aims to understand the social food processing traditions of ancient communities, and reveals the steps and techniques involved in animal carcass processing. Butchery marks on animal bones enable archaeologists to understand the types of tools and their materials that were used in butchery. Experimental butchery studies have contributed to much of what we know regarding ancient butchery and animal processing as it is vital to understand the condition under which the marks are created. Butchery mark identification research has focused almost exclusively on slice marks and percussion marks with very little attention paid to chop marks. Chop marks are high impact marks created with both sharp and blunt force that are intended to sever the bone. The most common definition and identification criteria for chop marks is a smooth cut surface extending into the bone tissue. We have found this definition and identification criteria to be problematic for numerous reasons. This paper discusses the ongoing second stage experimental project to develop more accurate identification criteria for chop marks in the zooarchaeological record, with a focus on the differentiation between chop marks created by stone, copper, and bronze axes. We will outline

the progression of this project and discuss the evolution of the experimental research highlighting the methodological challenges, current experimental research design, and preliminary results.

4 REPLICATING TANGENTIALLY SPLIT OAK PLANKS IN PREHISTORY: OBSERVATION AND UNDERSTANDING THROUGH DOING, A MASTER'S THESIS

Abstract author(s): Darrah, Hamish (Independent Researcher)

Abstract format: Oral

Understanding approaches to the conversion of timber in prehistory is critical to the analysis of wooden material culture from this period. There are many ways in which conversion is achieved. This research aimed to investigate the relatively understudied form of conversion of tangential plank splitting.

A rich assemblage of structural timbers from excavations at the Iron Age site of the Black Loch of Myrton, Dumfries and Galloway, in Scotland, provided a case study which informed the basis of this research. Amongst these timbers, a series of upright tangentially split planks from large oak trees were discovered.

Building on existing research, an actualistic experiment was undertaken to replicate these planks to better comprehend the reasons why prehistoric woodworkers might have chosen to adopt this conversion approach. The research approached the evidence from a biographical perspective, exploring the life history of these planks from their origins as living trees to their use in construction. Specifically, the working and dressing of the planks and associated transportation evidence, tool use and mark evidence were investigated. To explore these issues a large oak tree was split into planks and worked following the evidence from the Black Loch of Myrton.

This presentation considers the successes and the limitations of this thesis in expanding and enriching our understanding of specific aspects of prehistoric craftsmanship.

5 AN EXPERIMENTAL APPROACH TO THE STUDY OF AMBER PROCESSING IN THE NEOLITHIC

Abstract author(s): Cakare, Agnese (Institute of Latvian History, University of Latvia)

Abstract format: Oral

Amber appears relatively late in the archaeological record on eastern shores of the Baltic Sea, being mostly restricted to the Neolithic period, however, the presence of amber artefacts in majority of Latvian settlements and burial sites of this period and its distribution further inland, shows the important role it rapidly assumed in late Stone Age society. There are major Neolithic amber processing centres in the East Baltic, but the rarer distribution of amber working elsewhere in the Baltic Sea region may have left it less "visible" in context of technology research, comparing to materials like flint, bone and antler, which were used both longer and for wider range of purposes.

Traditionally, only typological analyses of amber artefacts have been carried out, fewer studies have focused on technological analyses. Based on the concept of chaîne opératoire, it can be argued that material culture is the knowledge passed down through generations, shared among a group of people. Each artefact is considered as a final product with a characteristic sequence of operations, where specific choices are made at each stage of production. These choices can be defined as culturally derived features/elements that can be observed on the artefact as specific physical characteristics. Thus, allowing to identify analytical units that reflect culturally transmitted knowledge embedded in social traditions, as well as significant differences and similarities in knowledge that can shed light on social relations in time and space.

Using macro-/microscopic analysis, specific features of the techniques described in few available experiments from archaeological collections in the Baltic amber distribution region and replicated in experiments, were identified on the processed amber surface. Comparing with the artefacts from a Neolithic processing centre in Siliņupe (Latvia), it was found that flint tools were widely used for surface treatment, distinguishing four techniques: flaking, pressure flaking, shaving, and scraping.

6 HEMP (CANNABIS SATIVA L.) - A USEFUL PLANT WITH HISTORICAL AND FUTURE PERSPECTIVES. FIRST CULTIVATION- AND PROCESSING EXPERIMENTS

Abstract author(s): Lau, Ronja (Ruhr-Universität-Bochum) - Heeb, Julia (Museumsdorf Düppel)

Abstract format: Oral

During the excavations of the settlement on which the Museum

Village Düppel is based, hemp pollen was found in the pollen samples, dating to the middle ages. In order to show a realistic medieval village context our hemp project was started in 2021. As part of the crop rotation system, a small hemp field of about 400 m² was sowed in April.

One purpose is educational, as it is a good starting point for educational discussions with visitors. However, another important reason is research in textile archaeology, specifically in regards to the production sequences of plant fibres.

As it is the first time for all involved, the first year (2021) was mainly for gaining experience in order to design specific experiments for the next few years. The crop grew to a good height, the tallest one was over 3m.

A third of the field was harvested 109 days, another third 130 day and the last third 161 days after sowing. Water- and field-retting were tried, the main result was that the fibre from the field retting had a much darker colour than the fibre which was retted in water. Other targets for 2023 are the processing of fibres (spinning and weaving). As well as further sowings and harvests to expand the data base.

7 RECONSTRUCTING- AND USING - AN EARLY MEDIEVAL STRAW BRIDLE

Abstract author(s): Maguire, Rena (University College of Dublin)

Abstract format: Oral

Increasing evidence from new research into technical equitation in Ireland indicates the use of plaited and woven straw bridles for horses during Ireland's early medieval period, much of which did not survive in the archaeological record. Evidence exists, however, in texts and eye witness descriptions of rural equestrian practice during the Middle Ages. This craft persisted into the early modern period, with photographic evidence of plaited straw tack fitted to farming vehicles. This was a strongly vernacular solution to harnessing. We do not have any record of how these performed, despite grainy early photographs of the equipment, although a few pieces survive from the 18th and early 19th centuries. Based on one of these few harness sets from the post-medieval period, a working bridle was constructed. This paper sets out the findings of the project - how does it perform? How strong or enduring is it? Can we make suggestions as to social identities of the craftspersons who made them?

8 BRONZE AGE INSIGNIA: TECHNOLOGY AND FUNCTION

Abstract author(s): Hoshko, Tetiana (Kyiv Borys Grinchenko University)

Abstract format: Oral

There are two pairs of bronze products, one of which was found in mound No. 16 of the Hordiivka burial mound and dates back to 1300-1100 BC. Others is kept in the National Museum of the History of Ukraine (NMHU). It probably comes from the Dnieper region. They have clearly defined handles with a crossguard. Manufacturing technology - lost wax casting. The main intrigue of their production is an internal hole with a depth of 2/3 of their length.

It was interesting how these holes were obtained? My hypothesis is based on the remains of wood and carbonized organic matter found inside the rods. Therefore, wooden cores were used to form the cavities. During the experiment, several attempts to pour metal into the mold ended with active burning of the wood. As a result, the casting turned out to be defective.

As a result of the experiment, a hollow casting was obtained. It is similar in quality to "stylet" rods from NMIU, which has high porosity and is very saturated with oxygen. The casting is far from perfect due to the destruction of one of the vents. In addition, the clay mold was fragile and broke when the metal was poured.

About the purpose of these artifacts. My colleagues call them hyper-long hairpins. Extra-long hairpins are known in female burials in Germany, where they rested on the shoulders of those buried with the point up or down. All of them have a straight rod without protruding parts. Therefore, such pins were intended for fastening clothes on the shoulders. Our "stiletto"-rods lay near the hands of the deceased and have clearly defined handles. These items were not part of the costume. I think of them as insignia of power or stiletto rods.

9 EXPERIMENT, ARCHAEOLOGY & ART - THE TURF TO TOOLS PROJECT

Abstract author(s): Markewitz, Darrell (Independent Researcher)

Abstract format: Oral

Turf to Tools (2014, 2016) was originally conceived as "... an ongoing investigation in to landscape, material and craft, inspired by local archeological investigations in Rhynie, Aberdeenshire." The archaeological foundations centred on the work of Dr. Gordon Noble's investigations of Pictish sites, notably the 'Rhynie Man' stone, and later the excavations by Ross Murray at the 'Iron Age Craft Working Site' of Culduthel, nearby. To date, a total of nine bloomery iron smelts have been undertaken for T2T, the two main series at the Scottish Sculpture Workshop at Lumsden (close to Rhynie). These included tests of the unique local Macaulayite ore and peat as a potential fuel. Local materials would be utilized using prototypes established by the archaeology, through methods refined by experimentation, with an aim to replicating a specific object, being the axe depicted with Rhynie Man.

Taken together, this project illustrates an interface between archaeological research and practical experiment, extended into artistic vision.

Presented as pre-recorded video of PowerPoint slides with narration.

Available for ZOOM Q&A as appropriate

10

BY THE HAND OF THE SMELTER: BLOOMERY SMELTING EXPERIMENTS REVEALS TECHNOLOGICAL AND PROVENANCING ASPECTS OF IRON IN THE SOUTHERN LEVANT

Abstract author(s): Eliyahu-Behar, Adi (Land of Israel Studies and Archaeology and Department of Chemical Sciences, Ariel University) - Sauder, Lee (Independent Researcher, Germinal Ironworks,) - Stepanov, Ivan (CEZA) - Keen, Jake (Independent Researcher) - Brauns, Michael (CEZA)

Abstract format: Oral

Iron production is often considered one of humankind's most significant technological advances. While the identification of ironworking remains has improved our understanding of this practice in the early Iron Age in the southern Levant, several major technological and sociopolitical aspects remain unanswered. Particularly significant is the source of the raw material. Several geological iron-rich ore deposits are known in the southern Levant, however, archaeological evidence for their exploitation in antiquity is rare. To identify the use of ore sources, a reliable provenancing method for ferrous metals is required.

This paper describes the use of experimental bloomery iron smelting in order to investigate some of the technological aspects of iron production, particularly the role of raw materials and provenance. A series of systematic smelting experiments was conducted under carefully controlled scientific conditions, by a professional iron smelter. Several aims were put forward for the experiments, the main one being to establish a provenancing method for archaeological iron based on osmium isotopic analysis. The experiments were run utilizing ore deposits from the Negev region in southern Israel, in two types of furnaces: the shaft-tapping furnace and the bowl furnace.

I share some of the decisions made during the process of planning and conducting the experiments and their implications for the results obtained. I then summarize several significant contributions of the experiments to interpreting the archaeological record, as gleaned from previous field and analytical observations.

11

PEOPLE, PLACES, THINGS. A DETAILED INVESTIGATION OF PINCHED CRUCIBLES FROM EARLY MEDIEVAL IRELAND AND BEYOND

Abstract author(s): White, Averil (University College Dublin)

Abstract format: Oral

Through the study of non-ferrous metalworking in early medieval Ireland, it is quite apparent that certain aspects of this technology played an integral role in the production of fine metalwork. Technical Ceramics, i.e., crucibles, moulds, tuyeres, and furnaces are one such integral aspect in non-ferrous metalworking from this period. Crucibles tend to be the best indicator of non-ferrous metalworking on early medieval Irish sites, the pyramidal type being the most common crucible found.

A particular type of crucible which is referred to as pinched, due to the nature in which it was made, has been found on a select number of sites in Ireland, Britain, and Europe between the 7th and 10th centuries. To date, the largest number of this particular type of crucible has been found in Ireland, the main concentration being from Moynagh Lough, Co. Meath. Pinched crucibles were found on 7 Irish sites, 5 British sites and 4 north European sites and it is evident that these particular crucibles were mainly used on sites of considerable wealth. The movement of people between Ireland, Britain and Europe in the early medieval period obviously incorporated the movement of material culture, expertise, and technology. It is through these small, clay pots, that the social aspect of this ancient technology shines through and can tell us about the people behind the craft.

12

NEW TECHNOLOGY, NEW RECIPE? EXPERIMENTAL RECONSTRUCTION OF CLAY PASTES FOR THE PRODUCTION OF LATE CYPRIOT PLAIN WHITE POTTERY FROM ENKOMI

Abstract author(s): Minos, Chase - Dikomitou-Eliadou, Maria (The Cyprus Institute) - Zomeni, Zomenia (Geological Survey Department, Cyprus)

Abstract format: Oral

The Late Cypriot IA period (c. 1650 to 1550 BCE) is characterised by major social, economic and political changes on the island of Cyprus, one of which was the introduction of a new technology, the potter's wheel. In this paper, the introduction of this technology is studied from the perspective of the raw materials used to produce ceramics; specifically, Plain White ware from Enkomi. This urban settlement was an important trading centre located on the east coast of Cyprus, actively involved in the Eastern Mediterranean exchange networks. Plain White pottery is produced during this period with both handmade and wheelmade techniques. Previous research has suggested that the same fabric was used for both techniques of production and that potters were tempering their clays with rounded sand grains, which might have facilitated wheel-fashioning, easing abrasion, and reducing plasticity.

The aim of this study is to test this hypothesis with the compositional and technological characterisation of Plain White pottery fabrics, followed by their experimental reconstruction. Ceramic petrography will be used for assessing

the degree of fabric uniformity among similar Plain White vessel types produced with different potting techniques, and it will guide sediment sampling. At a second stage, the experimental reconstruction of the Plain White fabric(s) will test specifically the effects of rounded sand grains on the plasticity and workability of the ceramic paste(s) for producing pottery with different techniques. The stratified ceramic material from the site of Enkomi provides a unique opportunity to study these technological processes at an intra-site level. Lastly, experimental archaeology underpins the assessment of all those environmental, technological, and social factors that could have contributed to exploring how this new technology became established in Late Bronze Age Cyprus, as well as to what extent this methodology can help to reconstruct past pottery traditions and practices.

13 **SPECULARIA: AN ARCHAEOLOGICAL EXPERIMENTATION PROJECT FOR THE STUDY OF WINDOW GLASS IN THE ROMAN PERIOD**

Abstract author(s): Frère, Géraldine (University of Namur)

Abstract format: Oral

Conducted since 2019, my doctoral research aims at studying the production and consumption of windowpanes in Roman Gaul. Based on a pluridisciplinary methodology, the purpose is to determine how the production and uses of windows glass have been conditioned by technical, socio-economic and cultural factors.

The study of archaeological material from private and public contexts has already revealed several pertinent characteristics of these windows. One of those relates to the morphology of edges. Although some of them are irregular in shape and thickness, others are regular, rough and matte, reflecting the contact between the molten glass and a frame. In addition, we have diagnosed several categories of tools marks; the surface characteristics can also vary considerably. According to the scientific literature, the production technique for shaping these panes was to pour the mass of molten glass into a mold and stretch it with tools. Up to this day, this technique has not been tested yet. In response to these findings, a project of experimental archaeology, Specularia, has been set up in collaboration with glassmakers and Malagne archaeopark in Rochefort, Belgium. The objectives of this project are multiple, starting with determining whether the use of a clay mold, cold or heated beforehand, would facilitate the production. The experiment will also focus on the tools: the results will be correlated with the observations made based on archaeological data. By addressing this question of the chaîne opératoire as a whole, we hope to gain information on the socio-economic aspects of this industry.

The aim of this talk will be to present the different stages of the project, from the construction of the ovens (May 2023) to the production of the glass (July 2023). Through this presentation, the contributions of experimental archaeology to this study, and to archaeological research in general, will be highlighted.

14 **ARCHAEOLOGICAL EXPERIMENT AS A PART OF RESTORATION OF THE HISTORICAL MEMORY OF LOCAL COMMUNITIES - 1620 CESTA K PORÁŽCE PROJECT**

Abstract author(s): Rytír, Ladislav (University of Hradec Králové)

Abstract format: Oral

This paper will introduce archeological experiment which is part of 1620 Cesta k porážce (www.1620.cz) project, which is focused on commemoration of the beginning of the Thirty Years War in Bohemia (Bohemian revolt 1618 - 1620). As a part of commemoration events there was artillery redoubt reconstructed at Rakovník battlefield.

We know some instructions and recommendations are in period Military Handbooks. We verified this information in terms of real difficulty and human resource requirements. We built 120 m of field work, enclosing area of 900m² with gabion protection and artillery platform.

To simulate deployment of workers and how it inflicts speed and quality of work, there was three groups of them: 1 - students (as forced power), 2 - reenactors (as volunteers or forced soldiers) and 3 - paid diggers (as paid power) in total number around 57.

We were focused on work speed, its quality and also durability in conflict and time (redoubt and process of its spontaneous decay up to 10 years).

I will also introduce whole project, which purpose is to commemorate and, to some extent, experience the events of the Thirty Years' War in Rakovník region. Project includes lectures and youtube videos, exhibition, archeological constructions and other cultural achievements aimed at bringing together professionals, enthusiasts and the general public.

15 EXPERIMENTAL ARCHAEOLOGY AND CULTURAL PROTECTION PROGRAMMES: A CASE STUDY FROM NORTH AFRICAN MOUNTAINS

Abstract author(s): Radini, Anita (School of Archaeology, University College Dublin)

Abstract format: Oral

North Africa is home to a vast heritage of traditional crafts, some of which are thousands of years old. Climate change, causing lack of rainfall and desertification, as well as dramatic economic changes are threatening the survival of many traditions. An ever increasing number of communities are forced to relocate, leaving behind their homes, workshops, way of life and familiar grounds. As a consequence, the memory of many traditional crafts that once supported those communities is disappearing fast, in part due to the lack of contacts between the old and the new generations. Many of the natural resources needed for such crafts are also disappearing due to climate change. This paper examines how Experimental Archaeology can be used to bridge generations no longer in contact with one another, supporting the transmission of skills - filling recent gaps of knowledge generated by the relocations of communities. Using a case study on ancient natural colours and dyes, it will describe how surveys of old market products as well as the analysis of fragmentary evidence of material culture recovered from abandoned villages can be used to help communities to preserve the memory of at least a portion of their forgotten traditions by the means of Experimental Archaeology.

16 THE VOUNOUS SYMPOSIUM: BUILDING COMMUNITY THROUGH CRAFT AND EXPERIMENTAL ARCHAEOLOGY

Abstract author(s): Fregni, Elpidia Giovanna (Unaffiliated)

Abstract format: Oral

One can see objects from Bronze Age Cyprus in almost every art or natural history museum in Europe and the US. However, on Cyprus one has little opportunity to see the objects in situ. The export of so much of the island's legacy created a vacuum in which there are few opportunities to experience Cyprus' cultural heritage. The creation of the annual Vounous Symposium has sought to rectify this by recreating the pottery and statuary that are seen in museums worldwide. These objects are made in an open-air environment during the ten-day long symposium using materials that are sourced in the mountains on the island, often from the same sources that were used in prehistory. During the symposium the public is invited to see the artists recreating statuary, working in ceramics and casting metal. Students from local high schools also have the opportunity to intern with the artists and researchers. In addition, there are talks and workshops given by artists and researchers.

Today the symposium has grown from a handful of artists to include over fifty participants that include artists, researchers, and archaeologists. Future plans include the construction of a permanent open-air museum where visitors can take courses in Bronze Age craft techniques.

Vounous serves multiple communities in Northern Cyprus. Through experimental archaeology researchers and the public can understand the technology, techniques, and the use of resources that go into making the objects seen in museum exhibits. Artists gain an understanding of past techniques and the development of their craft, creating a sense of cultural continuity. The greater community benefits from experiencing their local history, creating a sense of connection to the past.

The Vounous project continues to weave a narrative that connects the distant past with the people of North Cyprus, bringing heritage to life.

17 CULTURAL LANDSCAPES AND SOCIAL SPACES (CLASS)

Abstract author(s): O'Neill, Brendan (University College Dublin)

Abstract format: Oral

From the prehistoric period to today people around the world make/made their houses from locally sourced, organic materials. These structures represent complex relationships between people, landscapes, and materials, making them unique focal points to consider concepts of human/landscape interactions and human health and well-being.

One of the aims of CLaSS is to harness the now extensive experience in reconstructing Iron Age and early medieval roundhouses in academic settings and AOAMs to conduct long term qualitative and quantitative research, exploring living conditions and 'daily life'. Taking an interdisciplinary approach, this project has partners in architecture, structural engineering, forestry, ecology, folklore, history and archaeology, each bringing their own particular subject strengths.

Among the various outputs of this project will be public displays themed around the idea of 'living' during these periods and will take place within AOAMs across Ireland and Britain. We are also collecting subject specific representations of these structures to include in a public exhibition in 2024, which will allow audiences to see the kinds of work that academics are engaged in and what this adds to our collective knowledge of the past and present.

This presentation will showcase our approach in bridging the gap between research and public audiences. It will introduce the CLaSS project, provide case-studies of work completed and explore some of the insights already obtained.

18 **MARITIME MINDSCAPES: VIKING AGE SEAFARING IN THE LIGHT OF RECENT EXPERIMENTAL FIELDWORK**

Abstract author(s): Jarrett, Greer (Lund University)

Abstract format: Oral

The seaborne movement of people, animals, goods, knowledge, and beliefs was a ubiquitous aspect of the Viking world. This is indicated by an increasing body of evidence from various disciplines that links people, places and things across maritime space, but this evidence does little more than provide us with points of origin and destination, deposition or burial. Much remains to be understood about maritime travel per se, both from a practical point of view, and from what we might call a cognitive or ontological one, by which I mean the way Viking Age mariners experienced sailing voyages, and how this experience engendered particular mental geographies and afforded culturally-specific worldviews.

In this presentation I will tackle several themes relating to Viking Age travel in light of experimental trial voyages conducted in 2022 along known Viking Age sailing routes, focusing on aspects of route choice, risk judgement, and the location of anchorages and havens. The goal with this approach is to reconstruct the “scapes” of Viking Age seafaring: the seafaring routes and environments, but also the practices and mindscapes entangled with maritime travel. It is hoped that through this approach, we can discover not only where people travelled, but also what these journeys were like, what understandings of the world they were entangled in, and how these afforded the practices observable in the surviving evidence.

I argue that both the voyages themselves and the mental geographies of the voyagers were afforded by the profoundly dynamic, contextual, collective, and uncertain nature of seafaring practice in the Viking Age. These practices were shared between seafaring communities throughout the Viking world, and may in fact have also “travelled” across time, creating a continuous heritage of maritime practice extending from the eve of sailing technology to the end of the 19th century.

19 **SMOKE AND THE WATER. TOWARDS A NEW UNDERSTANDING OF ROMAN UNDERFLOOR HEATING SYSTEMS**

Abstract author(s): Kienzle, Peter (LVR-Archaeological Park Xanten)

Abstract format: Oral

In 1989 the reconstruction of the small Roman baths was completed at the LVR-Archaeological Park at Xanten (Germany). Fired with wood, the baths were heated up regularly for events and special occasions until 2005 when poisonous smoke got into the visitor areas due to cracks in the walls. In preparation for a general refurbishment of the baths, a research project was set up to investigate improvements to the original reconstruction design, operational mistakes and possible similar problems in Roman times.

A 3D-digital model of the baths was created, focussing on the interconnected voids and spaces of the underfloor hypocaust area, the box-tiles in the walls and the flues in the roof space. This complex space was the base of a computer generated airflow model during the heating process.

The first preliminary results of this research show, that our century-old understanding of the technical processes of Roman underfloor heating need thorough re-consideration. Probably, we need to distinguish between “chimneys” made of box-tiles at the far end of the structure and fully box-tiled walls in the caldarium, which do not provide an exit for the smoke. They must be perceived solely as a sort of “active wall insulation” connected to the hot fumes in the hypocaust area.

Further research focuses on the thermal expansion of the suspensura floor slab. When heated up, this floor slab expands its dimension but is restricted by the box-tiled walls. Thus, the thermal expansion process causes destruction of the box-tiles. Since physics have been the same 2000 years ago, the Roman opus signinum floor slabs must have had a smaller thermal expansion coefficient.

The paper will show the importance of putting theoretical knowledge into reality and benefits of combining traditional handcraft buildings with modern technological research.

INTERDISCIPLINARY PERSPECTIVES INTO ROMAN COMMERCE, ECONOMY AND THE ACQUISITION OF NEW TASTES DURING THE ROMAN PERIOD FROM THE 4TH CENTURY BC ONWARDS

Session theme: 1. Artefacts, Buildings & Ecofacts

Session organisers: Riso, Federica - Vandorpe, Patricia (ICAC - Institut Catalan de Arqueologia Classica) - Limina, Valentina (Université Catholique de Louvain)

Session format: Regular session

From the 4th century BC onwards, the expansion of the Roman Empire, eventually, over large parts of Europe had a significant impact on society. The creation of a new transport network and the emergence of cities were two of the most important and lasting changes brought about. As Rome expanded and developed contacts with other cultures far beyond the Mediterranean, new tastes and social practices were also acquired, often manifested in material culture. This session aims to explore Roman commerce and economy through different lines of evidence (e.g. archaeological remains, ceramics, inscriptions, landscape archaeology etc.). In addition, it aims to investigate the role of the ancient transport network in the process of urbanisation and/or the acquisition of new 'tastes'.

We encourage papers focusing on Roman trade without chronological or geographical restrictions. Points of discussion could potentially, but not exclusively, include:

- The role of cities, harbours, rivers and warehouses in the distribution and reuse of amphorae and other shipping containers
- Social and cultural interactions in trade and exchange
- Economic power and the social status of traders
- Methodological issues when dealing with the investigation of ancient trade
- New technologies to investigate ancient trade, networks and transport
- Income, customs, religious beliefs, and identities conveyed by goods, trade and traders
- Dietary habits and stereotypes in the perception of luxury goods
- Access to luxury goods, the reasons why, and how material culture relates to their trade
- Tradition and innovation in practices related to trade and manufacturing

ABSTRACTS

1 AN EXPLORATION OF PLANT FOOD IN ROMAN ITALY: CONNECTIONS, COMMERCE AND FOODWAYS

Abstract author(s): Riso, Federica - Livarda, Alexandra - Orengo, Hector (Institut Català de Arqueologia Classica)

Abstract format: Oral

This paper explores archaeobotanical food plant remains across Roman Italy approaching them as proxies to social relations, trade, and economy. Archaeobotanical material, focusing exclusively on food plant remains, from more than 300 sites dating to between the Early Republican and the Late Imperial periods are included in a relational database and form the primary material of this study. Alongside plant remains, we have been recording recovery, preservation, and taphonomic, as well as contextual details on a sample-by-sample basis. In this paper, we first discuss and intend to filter out biases introduced by the archaeological process of unearthing these remains, and identify spatial and temporal disparities. Taking into account these, we then move on to explore which food plants were being consumed and identify newcomers. Combining these archaeobotanical and their associated archaeological information, we also conduct social network analysis to add further insights into the socio-economic relations forged on the basis of shared identities in food plant consumption. We conclude by highlighting future research directions and the potential of this work.

2 AN INTERDISCIPLINARY APPROACH TO FOOD ECONOMY IN THE WESTERN ROMAN EMPIRE: ARCHAEOBOTANICAL REMAINS AND CERAMIC RESIDUE ANALYSIS OF IESSO

Abstract author(s): Baniou, Theoni (Landscape Archaeology Research Group - GIAP; Catalan Institute of Classical Archaeology - ICAC) - Suryanarayan, Akshyeta (Culture, Archaeology and Socio-Ecological Dynamics - CASEs; Universitat Pompeu Fabra) - Villanueva, Joan - Moraleda, Nuria (Institut de Ciència i Tecnologia Ambientals - ICTA; Universitat Autònoma de Barcelona - UAB) - Livarda, Alexandra (Landscape Archaeology Research Group - GIAP; Catalan Institute of Classical Archaeology - ICAC) - Romani, Núria (Serra Hünter Fellow; Autonomous University of Barcelona - UAB) - Rodrigo, Esther (Serra Hünter Fellow; Autonomous University of Barcelona - UAB)

Abstract format: Oral

This presentation will focus on diet and food economy in the western part of the Roman Empire using the site of Guissona (Roman Iesso), Spain as a case study. Guissona is one of the most important sites in the region, as it is one of the very few archaeological sites in the Iberian Peninsula, and Mediterranean in general, that preserves organic material in anaerobic conditions, allowing much more nuanced insights into the whole spectrum of food resources. Iesso was a Roman town founded in 120 BC and was inhabited until the 7th century AD with a maximum area of 18 hectares. Archaeobotanical work has focused on material retrieved from a series of wells that were located across different sectors of the town. This paper will provide an overview of the plant resources consumed and will discuss how these can inform on social and economic relations and identities within the increasingly connected Roman world. The archaeobotanical data will be complemented with information on foodways as revealed by organic residue analysis from potsherds recovered from the wells but also other parts of the site, reported here for the first time. Ultimately, this paper aims to showcase how multidisciplinary approaches can add depth to investigations of food economies and culinary pathways in the past.

3 IDENTIFYING ROMAN TRADE THROUGH ZOOARCHAEOLOGICAL REMAINS IN NE IBERIA: METHODOLOGICAL PERSPECTIVES (AND SOME LIMITS)

Abstract author(s): Valenzuela-Lamas, Silvia (Archaeology of Social Dynamics, IMF-CSIC, Spanish National Research Council; UNIARQ - Universidade de Lisboa)

Abstract format: Oral

Zooarchaeological remains offer a valuable perspective about meat consumption and animal husbandry practices across time and space. They also reflect the trade of living animals, the translocation of exotic species and the transport of luxury goods. The setting of the Roman Empire enabled an unprecedented scale of transport at all levels, from basic commodities to the most luxurious and exotic items (e.g. seafood in inland sites, wild animals for the circus). This paper will focus on the methods that enable to detect animal trade in Roman times in NE Iberia, and how the assemblages compare with the Iron Age ones. The presentation will offer primary data on the transport and ubiquity of seafood in inland sites from present-day Catalonia, data on exotic species, and also some data about animal mobility in Roman times through strontium isotopes ($^{87}\text{Sr}/^{86}\text{Sr}$). It will also discuss the pitfalls linked with bone preservation, excavation techniques, and other potential problems when analysing Roman faunal assemblages, most notably using strontium isotopes.

4 A MATTER OF TASTE? SHARED TRADE OF SALTED-FISH PRODUCED IN LUSITANIA AND AFRICA PROCONSULARIS (3RD - 5TH CENTURIES AD)

Abstract author(s): Bombico, Sonia (University of Évora; CIDEHUS - Interdisciplinary Centre for History, Culture and Societies) - Nervi, Cristina (Ministero dell'Istruzione, dell'Università e della Ricerca - M.I.U.R.)

Abstract format: Oral

We will analyse different shipwreck contexts in which Lusitanian and North African amphorae for fish products coexist on board, pointing to a joint redistribution trade.

From the mid-3rd century until the middle of the 5th century, it becomes quite frequent for Lusitanian fish containers to be found in mixed cargos alongside with Africa Proconsularis fish amphora types. Sometimes, as the main cargo (Punta Vecchia 1 – Corsica; Fontanamare A – Sardinia), in other cases, as a secondary cargo (Femina Morta and Marzameni F – Sicily). The Lusitanian products also appear in mixed cargos with fish products, not only from North Africa but also from Baetica (Cabrera III – Balearic Islands; Punta Ala A – Italian coast). On the other hand, there are also shipwrecks in which Lusitanian and North African products circulated separately. We highlight the wrecks of Cala Reale A (Sardinia) and Randello (Sicily) with homogeneous main cargos of Lusitanian amphorae.

Lusitanian fish products present an apparent competitive capacity in Late Antiquity, seeming to have successfully adapted to the economic changes that transformed the African provinces into the great factories of Rome's food-stuffs, and appearing to have supplanted Baetican production in consumer markets, during the 4th century.

The interpretation of the economic role of the Iberian Peninsula provinces and Africa Proconsularis in the trade of fish products, in the Western Mediterranean, is a universe to be clarified and quantified. Would they have marketed different fish products? What evidence do the macro-residues preserved in amphorae and the analyses of organic residues provide? What information can we extract from the interpretation of shipwrecks and port contexts? Is it a matter of taste? Can we identify different consumer markets?

In this approach to the topic, we add to the analysis of shipwrecks, two port contexts in Sardinia - Nora and Olbia.

5 FOOD PLANT COMMERCE AND THE DEVELOPMENT OF NEW TASTES IN GERMANIA

Abstract author(s): Vandorpe, Patricia - Livarda, Alexandra - Orengo, Hector - Berganzo, Iban (Institut Català d'Arqueologia Clàssica - ICAC; Landscape Archaeology Research Group - GIAP)

Abstract format: Oral

The incorporation of a large part of Central Europe to the Roman Empire from the first century BCE onwards to form the provinces of Germania Inferior and Superior, brought along a series of changes to the local communities. These, or parts of these, became incorporated into the Roman 'globalised' network that led to the introduction of new ideas, 'forms', materials and tastes, some of which were adopted, adapted or further developed. In this paper we present an investigation of some of these new 'tastes', employing archaeobotanical remains as our primary evidence. To do so we collected all published archaeobotanical material from the provinces of Germania into an object-oriented relational geodatabase with the aim to first identify their distribution through time and space within our study region. The ensuing analysis seeks to establish plant related food patterns of different social groups and their implications in negotiating the new realities of the Roman world. Finally, we discuss how the food plant network in the area can be investigated and how this can help shed new light into Roman economy.

6 ROMAN ROAD (RE)CONSTRUCTION IN GERMANIA INFERIOR AS AN ENVIRONMENTAL AND ECONOMIC PROXY: THE CASE OF CUIJK AND UTRECHT

Abstract author(s): Vanderhoeven, Timo - Kars, Eva (EARTH Integrated Archaeology) - Bongers, Toon (Ghent University)

Abstract format: Oral

In the last 30 years, several sections of the Roman road system have been excavated in the Netherlands. These sections display divergent construction and maintenance patterns related to local topography and overarching military-political factors. This lecture discusses two multidisciplinary studies which produced new insights into transport networks and hydrological events.

The first study discusses the Roman road at Cuijk, part of the main road connecting Atuatuca Tungrorum (Belgium) in the south with Ulpia Noviomagus (The Netherlands) in the north. The road exhibits evidence of flooding during the middle Roman period. Previous research revealed an intensification of hydrological activity in northwestern Europe during the Roman period, resulting from changing land use and climatic factors. At Cuijk, these events elicited subsequent reconstruction and repair of the road.

The second study covers a survey of Roman ceramic building material from two sites around Utrecht. The building material was applied as a foundation layer in the construction of the Limes road shortly after 80 CE. The tiles were macro and microscopically investigated. The material was dated in the first century CE and tentatively connected to the 15th legion, stationed at Castra Vetera (present-day Xanten, Germany) between 43 and 69 CE. This suggests that the ceramic building material from Utrecht could originate from Xanten, circa 130 km downstream of the Rhine.

In this lecture we will discuss how the case studies can serve as a proxy for economic and environmental events. This lecture also highlights the complex nature of Roman roads and the promising result obtained from a multidisciplinary approach. Furthermore, it offers new insights into Roman transport logistics and the importance of road networks, which were decisively and repeatedly reconstructed.

7 THE ROLE OF THE RIVER MEUSE IN THE TRANSPORT NETWORK OF THE MIDDLE-ROMAN PERIOD (70 - 270 CE)

Abstract author(s): Bongers, Toon (EARTH Integrated Archaeology)

Abstract format: Oral

Major rivers, such as the Rhine, served as transport corridors throughout the Roman period. However, the role of smaller inland rivers, such as the Meuse or Scheldt, is less clear. Recent research on the Scheldt basin demonstrated a high degree of connectivity and concluded that the Scheldt and its tributaries could support riverine transport, albeit on a modest scale and with seasonal variations.

This presentation focuses on the adjacent Meuse river, which primarily ran through the military-oriented province of Germania Inferior. The river springs in the fertile loess plateaus of Northern France and quickly reaches the limestone quarries of the Belgian Ardennes. From here, it meanders through the Pleistocene sands of the southern Netherlands, ending up in the North sea with the Rhine. Numerous Roman settlements are found along its banks, yet clear evidence of riverine transport in the Roman period is largely absent. Roman-era sources often refer to the Meuse but offer little information on its role in the transport network. This contrasts sharply with medieval sources that illustrate a viable shipping lane between northern France and Germany.

The role of the river Meuse will be assessed firstly by presenting an overview of the relevant archaeological sources. Secondly, GIS-based spatial network analysis will be used to calculate transport times and costs for several locations within the network and an accessibility map for the entire transport network. The results for the middle Roman period will be compared with the early- (50 BCE – 70 CE) and late-Roman period (270 – 410 CE). However, the novelty of this study lies in the comparison between a multi-modal (i.e., seaways, rivers, and land transport) and a bi-modal transport system (i.e. seaways and roads), which allows us to evaluate the role of rivers in the transport network of north-western Gaul and Germania Inferior.

8 FILLING IN THE GAPS: COMBINING DATA ON MARKET MECHANISMS IN NORTHERN GAUL

Abstract author(s): Clotuche, Raphaël (INRAP - National Institute for Preventive Archaeological Research) - Willem, Sonja (Art and History Museum Brussels)

Abstract format: Oral

Modelling of transport routes has in the past mainly focused on large networks, reflected by the distribution of amphorae and Samian wares. Moreover, Mediterranean models have sometimes been blindly superimposed on other regions, not considering regional mechanisms. Following important work on market mechanisms in Britain (e.g., M. Fulford), the systematic identification of local and regional pottery productions can bring new insights on trade routes and commercial contacts. Even if most of the pottery travels as bulk, their mapping can reveal unknown roads or passageways as well as give evidence for specific contacts e.g., in the context of military control. It can also show the evolution of market mechanisms, testifying for competition and dominance of important regional production centers, a concept that is generally not accepted for the Roman period.

This contribution focusses on different examples from the mapping of pottery in the North of Gaul, with specific interest for contacts with on the one hand the Rhine limes and, on the other hand, Britannia. A special interest goes to the Roman small town of Fanum Martis, where a variety of material studies have permitted to reconsider regional interactions. Pottery data are combined with other indicators, such as epigraphical evidence and different material categories, such as stone (grinders, ornamentation, statues...), gems, carpological data, metal, etc. The most recent information depicts an intricate mechanism of adapting to demands, from a local to an interregional level, filling in the gaps of our understanding of the economical dynamics of these outskirts of the Roman Empire.

9 ECONOMIC INTEGRATION, TRANSPORT AMPHORAE, AND THE MEANING OF CONNECTIVITY IN THE LATE ROMAN EASTERN BALKANS, 4TH-7TH C. CE

Abstract author(s): Watson, Claire (University of Chicago)

Abstract format: Oral

The question of economic integration—connectivity through trade—looms large in current discourse surrounding the Roman Empire. Was the Empire composed of micro-regional economies prioritizing self-sufficiency, or were Roman markets characterized by lasting, substantial trade connections? Answers from scholars like Bang, Tchernia, and Temin have varied widely.

I argue that these debates persist, and lack meaningful resolution, largely because of a lack of clarity regarding what “connectivity” really means. Many definitions tend toward tautology, and connectivity is often considered a binary, rather than an array of possibilities. Studies of connectivity are further hindered by a lack of sensitivity to context. Far more productive than considering connectivity as an objective phenomenon consistent across time, I ask what connectivity means in a specifically Roman context. I propose a framework for resolving these problems and assessing trade connections, using the archaeological record of the Late Roman Eastern Balkan provinces as a case study.

To assess connectivity, I use a concept borrowed from economics: “trade-thickness.” This concept assesses market integration by identifying how many possible trade connections actually see trade in a given period. The application of this concept to transport amphora assemblages from Late Roman sites across Thrace, along with related statistical and spatial analyses, will establish a quantitative and comparison-friendly baseline for defining connectivity via trade in the eastern Balkans in the 4th-7th centuries CE. This baseline may then be used to compare these sites to others across the Roman world, assessing what “connectivity” means—and entails—in a Roman provincial context.

Though connectivity may at times be an intractable concept, the methodology deployed here establishes a means of evaluating degrees of connectivity in the archaeological record, enabling more lucid analyses of the social drivers of this connectivity. Furthermore, it allows for comparison between sites, between provinces, between time periods, and more, all while retaining context-sensitivity.

10 PRIVATE VS. IMPERIAL TRADE - DIFFERENCES IN FINE WARE AND FOODSTUFF TRADE IN THE MEDITERRANEAN

Abstract author(s): Zerzeropulos, Katharina (Institut fuer Ur- und Fruehgeschichte Kiel; ROOTS Cluster of Excellence)

Abstract format: Oral

The paper focuses on one of the aspects of different trade networks within the Mediterranean during the Roman Empire. Trade networks are not universal but always changing and can be distinct for certain forms of products. Differing distribution mechanisms such as piggy-back loads to imperial grain freighters and private trade in foodstuffs could give an insight into the methodology of reconstructing trade route in maritime trade. In order to understand if there is a difference between private and imperial trade routes, several coastal sites in the Mediterranean were investigated for their fine ware and amphora records coming from stratified deposits, allowing to focus on the time of the end of the use of a container, seeming closer to their time of use as for example their production date (if available). The fine wares were chosen due to the status of recording in excavations and their secure place of production. They will stand as a representative for the imperial trade as it can be assumed that many fine wares traveled as piggy-back loads to larger freights. Amphorae on the other hand are used also due to their well-known production sites and the different nature of their transport, namely private enterprises.

The aim is a comparison of access to imports of certain regions in the Mediterranean. By quantifying imports in coastal cities and then distinguishing the regions of origin of these imports, a picture of trade flows can be reached for the time under investigation, which focuses on the time from 50 BCE to 150 CE to show a possible change of mechanisms from the time of the late Republic to the stable period of the pax romana.

As a preliminary result, the above-mentioned undertaking will be presented and put forth to discussion.

11 COSSUTII: A CASE OF TRADE CONNECTIVITY BETWEEN ROME AND GREECE IN THE LATE REPUBLIC

Abstract author(s): Geraci, Silvia (Università di Bologna)

Abstract format: Oral

The period between the 2nd century BC and the first half of the 1st century BC marks the turning point for the intense connectivity between two significant areas of the Mediterranean: Rome and Greece. It comprises the first intense contacts between these two areas: as Polybius highlights, after the Second Punic War the Mediterranean world experiences a global moment, with an increasing of an already existing connectivity. With the beginning of the Principate the perception of the connections will change.

Several scholars examined the relationships in the Mediterranean area, often focusing just on one region or deepening the discussion about the Imperial ages. This paper wants to analyse three different aspects: communications and mobility, economic relationships, and cultural influences on society.

An example that shows how these different aspects of Mediterranean connectivity worked is the case of Cossutii, entrepreneurs in activities connected with the exploitation of quarries and the manufacture of marble. This family reached its peak between the 2nd and the 1st century BC and several individuals, ingenui and liberti, bearing the name Cossutius have been found in inscriptions from all over the Mediterranean, especially in Greece (Athens, Delos, Paros, Erythrae), involved in marble business: architecture, sculpting, excavation, mining and selling.

Eventually, this paper aims to investigate the relations between Rome and Greece in their global sense, chronologically and geographically, through a punctual reference and analysis of literary, epigraphical and archaeological sources.

12 THE LANDSCAPE OF GUBBIO BETWEEN ROMAN POWER AND UMBRIAN IDENTITY

Abstract author(s): Negro, Marianna (University of Cambridge) - Ceccarelli, Letizia (Politecnico di Milano)

Abstract format: Oral

This paper deals with the analysis of the development of Umbrian and Roman landscapes and the relationship between the two in the Gubbio Valley. The results are obtained through the revisitation of the partly unpublished data that was recovered with the Gubbio Survey, carried out in the homonym basin between 1983 and 1987 by the University of Cambridge. Despite the explosion of evidence of Roman period compared with earlier times, the paper aims to challenge the concept of romanisation by concentrating on the agency of the Umbrians.

The Roman landscape of Gubbio is quite different from the rest of Roman Italy, the ritual manifestations of the valley are an example. There is copious evidence of Umbrian rituals, which are mostly distinguished by the deposits of highly schematic votive bronze figurines on upper reaches such as Monte d'Ansciano. This is a distinctively Umbrian ritualisation of the landscape through the agency of material culture, however there is evidence of continuation of ritual activity in a hybrid form; a small number of interesting Roman terracotta figurines are found in the rural landscape of the Gubbio valley, and, despite terracotta figurines being quite a common phenomenon during the Roman times, the Gubbio valley figurines are different in terms of the shape and context in which they were found. Moreover, the copious evidence of Vernice Nera, identified as belonging to the Hellenistic period, indicates that the occupation of the countryside is already well developed in the Umbrian phase of the study, indicating an already forming complex state organisation. Finally, the Iguvine tables are another example of strong Umbrian identity, being still written in Umbrian language even if they were Roman citizens. Therefore, the Umbrians retained their strong social identity reshaping the dominant Roman power, as proved by material culture, language and religion.

13 **LANDSCAPES OF POWER, TRADE NETWORKS AND IDENTITY NEGOTIATION FOR 'INVISIBLE' ECONOMIES: A 'ROMAN' LIFESTYLE REVOLUTION? (2ND BCE - 5TH CE)**

Abstract author(s): Limina, Valentina (Université Catholique de Louvain)

Abstract format: Oral

The paper reconstructs the networks of patronage, friendship, and kinship for some elite groups of Roman Etruria in the centuries of 2nd BCE – 5th CE. It aims to demonstrate that their patrimonies were based on agricultural production and trades relating to spices, frankincense, purple, marble ivory, 'exotic' beasts, etc. Despite the idea of the 'corruption of trade' conveyed by literary sources from the 2nd century BCE, 'prestige foods' and 'luxury goods' were perceived as a must-have of the Roman lifestyle and in the first place among imported merchandise in the Italian Peninsula from the mid-1st century BCE. Unfortunately, the traces of these goods and, more importantly, of the dynamics of their trade are almost invisible at the archaeological level. However, an interdisciplinary approach integrating literary sources, epigraphy, prosopography, and archaeological findings is crucial in the lack of archaeobotanical data; network analysis can detect hidden clues.

Any economic and commercial transaction was based on 'trust', and the construction of a network would have been the safest solution to secure reliable partners for investments and to share the risk entailed by a business. In this sense, the entrepreneurial attitude of elites from Roman Etruria caused them to rely also on networks among individuals who shared the same social backgrounds, culture, and political ideology. The localization of archaeological findings, the identification of the trade agents acting for the protection of family interests and the supervision of negotia in the ports or cities of the Mediterranean lead to the investigation of the networks' structural components and the related landscapes of power. The relationship between luxury goods and negative stereotypes of ethnic identity is a key to understanding the crucial role of elite groups from Roman Etruria at the core of such businesses, embedded in the 'Roman' lifestyle revolution.

14 **A CHAÎNE OPÉRATOIRE APPROACH TO DEFINE BLACK GLOSS WARE CIRCULATION AT THE ETRUSCAN SANCTUARY OF PYRGI IN THE MID-REPUBLICAN PERIOD**

Abstract author(s): Abbondanzieri, Elisa (Dipartimento di Scienze delle Antichità, Sapienza Università di Roma) - Revello Lami, Martina - Vogiatzopoulos, Stamatīs (Department of Archaeological Sciences Universiteit Leiden, Faculteit Archeologie)

Abstract format: Oral

Caere (Cerveteri, RM) is one of the most important cities in Southern Etruria, located about 50 km north of Rome on the Tyrrhenian coast. In 1957 the Sapienza Università di Roma launched a research project on Caere main harbor, Pyrgi, located 13 km far from the settlement and connected to it through a monumental (10 m wide) road. Since then, yearly excavation campaigns have been carried out and led to the discovery of an extensive worshipping area featuring two monumental temples to the north and a more complex context characterized by small sacred buildings and altars to the south. Over the last few years, attention has been paid to the investigation of the north sector of the sacred area. Excavations have brought to light a significant quantity of black-gloss ware in connection with traces of local production (firing supports, misfired vases, wasters, etc.).

Starting from the analysis of different types of black gloss ware vessels and pottery spacers used in the kilns found at Pyrgi, this paper aims to illustrate the methodology applied for the characterization of local productions of black gloss ware. Even though preliminary, the morpho-stylistic study combined with petrographic analyses conducted on selected assemblages of ceramics from Pyrgi already enabled us to preliminarily distinguish different local productions from imported specimens, while providing at the same time valuable data to identify Caeretan exported ceramic vessels along the Tyrrhenian coast, greatly contributing to redefine ancient commercial routes.

15 COOKING POTS AND CONSUMER TASTES IN NORTHERN AND CENTRAL TYRRHENIAN ITALY (3RD CENTURY BC - 4TH CENTURY AD)

Abstract author(s): Goddard, Dominique (University of Cambridge)

Abstract format: Oral

This paper takes a foodways approach to Roman Italy, addressing the impact of transformations in Italy on consumer tastes between the 3rd century BC and 4th century AD through commonware cooking pots. As Italy's network of contact, trade and empire expanded across the Mediterranean and beyond, new regions opened up to facilitate the use of new ingredients, recipes, and technology in cooking practices. The changing shapes of ceramic cooking pots, on account of their everyday nature and use on a broad social scale, can prove to be a valuable indicator of culinary tastes on a wide geographical and temporal scale. These vessels have the ability to tell local stories of taste: when combined with archaeobotanical remains, they can be read against changing patterns of meat consumption and living standards. However, when different datasets are combined across the area under study, a wider picture emerges, allowing for an interrogation of culinary syncretism across Italy.

16 AFRICAN COOKING WARE AND LOCAL/REGIONAL IMITATIONS FROM THREE CONTEXTS OF LISBON AND ITS COMERCIAL DYNAMIC WITHIN THE MUNICIPIUM OF OLISIPO

Abstract author(s): Lopes, Martim (Universitat Rovira I Virgili; CHAM – Center for Humanities) - Calaveiras, Paulo (NOVA/FCSH - Universidade Nova de Lisboa) - Quaresma, José (NOVA/FCSH - Universidade Nova de Lisboa; CHAM – Center for Humanities)

Abstract format: Oral

The Roman town of Olisipo was one the most import ports in the Atlantic facade of Hispania and certainly the most important in the western coast of Lusitania, through an occupation that goes uninterrupted from the Iron Age until the present-day.

Despite the grand quantity of archaeological interventions that were made in the city in the last decades, the data that has been published on the later Roman town, from the 3rd century onwards, is still very scarce, mostly in what regards the African imports, ceramics that are very common across the Lusitanian territory on the 3rd to 5th centuries AD.

This paper intends to approach the African cooking ware from three sectors (Rua das Pedras Negras, Praça da Figueira and Palácio dos Condes de Penafiel), by studying an assemblage that surpasses the five hundred shards. It compiles this data with the results already published from other contexts of the city in an attempt to, with the usage of a statistical approach, recreate the commercial pattern for this ceramic in the city, during the Imperial phase.

Alongside the study the of the African imports, the authors have also identified some fragments of local/regional productions of imitation of African cooking ware, a phenomenon recently identified in the region of Olisipo, being this study another contribution for the comprehension of these productions.

17 REGIONAL POTTERY SUPPLY SYSTEMS BETWEEN THE STARA PLANINA AND THE DANUBE (MOESIA INFERIOR/THRACIA) DURING THE ROMAN PRINCIPATE

Abstract author(s): Diers, Lina (Austrian Archaeological Institute - OeAI, Austrian Academy of Sciences)

Abstract format: Oral

The paper introduces a research project that is currently being conducted at the Austrian Archaeological Institute, Vienna. The project aims to characterise and contextualise the regional economic supply and transport networks between the Stara Planina and the Danube in the Roman provinces of Moesia Inferior/Thracia in the 2nd and 3rd c. AD through the lens of pottery provenance studies. The productions of the various ceramic centres in the territory of the city of Nicopolis ad Istrum (Hotnitsa, Butovo, Pavlikeni, Varbovski Livadi) are examined using various archaeometric methods (petrography, INAA) in order to develop a reference base for provenance determination, which is then backed up by pottery finds from Novae, Nicopolis ad Istrum, and several rural sites along the Yantra, Rositsa, and Osam river valleys. The results are incorporated into research on potential transport routes, transport types, and rural settlement systems through an analysis of river transport possibilities, least-cost path analysis, and evidence for trade networks. The relationship between regional centres like the legionary base of Novae and the Trajanic civilian foundation of Nicopolis ad Istrum is investigated by adding a theoretical level to the project objectives, e.g. questioning the role of urban and rural settlements in both distribution and consumption of ceramic objects. The paper shortly introduces the project aims and questions, discusses potential methodological issues as a base for the session discussion, and presents first results from the 2023 summer pottery analysis campaign in the museums of Svishtov and Veliko Tarnovo, Bulgaria.

18 FOLLOWING TASTES? IMPORTS OF LATE ROMAN COOKING POTTERY (3RD-7TH CENTURY CE) FROM NEA PAPHOS (CYPRUS) IN ECONOMIC NETWORKS

Abstract author(s): Nocon, Kamila (University of Warsaw)

Abstract format: Oral

The micro-economic history of Nea Paphos in southwestern Cyprus has recently been extended by new studies of tableware, cooking pottery, and lamps. These have shown that the town was an important center for the circulation of pottery during the Early Hellenistic to Early Roman periods (late 4th century BC - late 2nd century CE). However, data on the circulation of pottery in later periods, the Middle and Late Roman (3rd-7th centuries CE), are still lacking, and archaeological research on the circulation of cooking pottery and its role in economic networks is limited. The results of an ongoing project on Middle and Late Roman cooking pottery from Nea Paphos suggest that imports of this category of pottery can illustrate complex multi-directional networks of material and social interactions. There is evidence that imported cooking pottery was widely consumed and imported into the city on a large scale. The inhabitants of the city were involved in the exchange of goods with several destinations, including Asia Minor and the Levant. Archaeological evidence suggests that between the 3rd and 7th centuries CE external factors caused a shift in the direction of the circulation of cooking pottery in Nea Paphos.

It is the aim of this study to show that the traditional picture of the circulation and trade of cooking pottery has been incomplete. By shedding new light on the consumption preferences and trade connections of Late Roman Nea Paphos, the present paper aims to fill this gap through a multidisciplinary study of this much-overlooked category of pottery.

19 POTTERY PRODUCTION AND MULTITEMPORAL READINGS OF MATERIAL CULTURE: THE CASE STUDY OF LATE ANTIQUE BRACARA POTTERY (BRAGA, PORTUGAL)

Abstract author(s): Machado, Diego - Martins, Manuela - Magalhães, Fernanda (Unidade de Arqueologia da Universidade do Minho; Laboratório de Paisagens, Património e Território)

Abstract format: Oral

The division of time into historical periods provides a linear appreciation and reading of historical events, while it limits, to some extent, the analysis of certain phenomena. This dual character of periodization has been denounced at least since the first generation of the *École des Annales*, whose members sought a critical reappraisal of documentation, interdisciplinary and original approaches in historical research. Historical disciplines have come to operate with a much wider range of phenomena, such as ideological, economic, social, religious, forms of thought, types of mentality, as well as replacing the absolute linearity of time with the systematic disposition of the discontinuity of time series.

One of the historical moments that has known great disputes for its periodization is the passage from the ancient to the medieval world. While Political History has privileged the conquest of the city of Rome, in 476, as its turning point, the development of economic, social and cultural studies has identified in the period between the 3rd and 8th centuries the constitution of a reality that extends classical society, Late Antiquity, or anticipates the formation of the medieval world, the High or Early Middle Ages.

Our proposal is to analyse the late antique pottery production of Bracara (Braga, Portugal) without a previous chronological restriction, that is, beyond the temporal or chrono-cultural division that the ceramic objects are submitted to. We believe that the negation of an aprioristic character of time in the formulation of historical problematics and, in particular, of material analyses, is capable of producing new knowledge about the societies which produced and consumed them.

A. POMPEIAN PLATTERS ON SITE 42 IN SIRMIIUM, SREMSKA MITROVICA, SERBIA

Abstract author(s): Štimac, Zvezdana (Archaeology department, Faculty of Philosophy, University of Belgrade)

Abstract format: Poster

Sirmium is a Roman city on the river Sava that existed from the 1st century BC until the 6th century AD. It has numerous site and its excavations started in 1957. All the sites in Sirmium have numbers as names. The site 42 was excavated in 1971. It has at least 14 layers characterized as floors. Some of the floors were next to each other meaning that they have the same dating and others are on top of each other. The whole site has dimensions of roughly 17x8 metres. The previous researchers characterized the site as a public building or villa urbana as it is close to the one of the forums in the city, There is also a possibility of the site being a small temple in the first century AD. In the end of the 1st or beginning of the 2nd century there might be a huge fire around the whole city and that is visible on this site. Roman layers date from the 1st century AD until the 4th or 5th century AD. There is around 6000 pottery sherds from the whole site. Majority of the pottery is actually in connection with preparing and cooking food as well as serving food and also preserving food and drinks in amphorae and pitoi. There are around 200 sherds of Pompeian platters which were produced in Campania, Italy and they were distributed around the Roman Empire during the first century and all

the way until fourth century, with possibility of local production as they represented tradition in baking the bread and making stews. They were first used by the Roman army. It is interesting to see if they were made locally or they were traded, or brought with soldiers in the first century.

731 GENERAL SESSION

Session theme: 1. Artefacts, Buildings & Ecofacts

Session chair:

Session format: Regular session

ABSTRACTS

1 OM HAIL! SOME STORIES ABOUT THE BASIC PROBLEM OF ARCHAEOLOGICAL WORK IN ASIA: CYCLICAL TIME VS. LINEAR NOTIONS OF TIME

Abstract author(s): Lange, Perry (Center for History of Science and Technology, Universität Hamburg)

Abstract format: Oral

What is a memorial, how authenticity is perceived and what meanings the concepts of linear and cyclical time perception have in this context, is of great importance for the understanding of cultural heritage in Europe and Asia.

Both time concepts have a direct impact on the perception of monument protection and cultural heritage.

The perception of time is shaped by two phenomena. First there is the very personal experience of a linear, continuous and consciously perceptible development, such as the changes in aging, growing up with their “breaks” and “new beginnings”. But time has always been perceived as a cyclical phenomenon in which changes are repeated with great constancy. Both phenomena, the linear time and the cyclical time, have accompanied mankind from their beginnings and are, in their complexity, decisive cultural catalysts for religious and philosophical questions - until today.

The practical work in Nepal has repeatedly and directly led to irritations in the communication between European and Nepalese experts, employees and institutions when it comes to the question of the value of historical material culture. One reason for these problems is the, in part, significantly different levels of meaning that are assigned to the concept of authenticity.

Why is something “old” valuable when it can - with perfect craftsmanship copied - shine in new splendor - after all, when the “spirit” of the place and not the object is the decisive factor for cultural value retention? And why should an object, space or artifact become more valuable if it is frozen and preserved exactly in its current state?

The lecture deals with the experiences and insights from over five years of work at one of the oldest temple sites in Nepal, the Anantaliṅgeśvara Mahādeva in the Kathmandu valley.

2 SHEPARDING THE FLOCK: GENOMIC CONSEQUENCES TO THE INTRODUCTION OF SMALL RUMINANTS TO EUROPE

Abstract author(s): Daly, Kevin (Trinity College Dublin)

Abstract format: Oral

The introduction of small ruminant livestock (sheep and goat) to Europe in the Neolithic period represents a tremendous demographic event in the history of these domestic species. Their spread within Europe necessitated successive founding events, depleting livestock populations of genetic variation. Removal from the range of their wild progenitor species would have additionally prevented genetic replenishment of variation by recruitment or unsupervised mating. Husbandry practices by early Neolithic European farmers may have also shaped genetic variation, with preferential breeding or selective slaughtering limiting the mating pool of successive generations. Thus, the geographic and temporal journey of small ruminants from Southwest Asia to the Atlantic edge, anthropologically driven, coincided with a genomic transformation.

This study will describe this process using whole genome and imputed genotypes from ancient European goats, revealing how human activity affected the genetic features of this partner species through the occurrence of inbreeding, homozygosity, and admixture from non-European sources. Finally we will report the first ancient goat genomes from the island of Ireland, and probe their relationship to ancient British and continental European goat populations.

3 EXPERIMENTAL TECHNIQUES APPLIED TO ARCHAEOLOGY. BEST PRACTICE FOR THE RESEARCH OF ORGANIC ARCHAEOLOGICAL ELEMENTS

Abstract author(s): González-Campos Baeza, Yolanda - Villalón Torres, David - García Viñas, Esteban - Ramos Soldado, José Luis (Andalusian Institute of Historical Heritage - IAPH) - del Pino Espejo, María José (Pablo de Olavide University - UPO) - Gómez Morón, Auxiliadora - Alzaga García, Milagros - Bernáldez Sánchez, Eloísa (Andalusian Institute of Historical Heritage - IAPH)

Abstract format: Oral

One of the main research frameworks of our project “Arqueomemes: Advances and Innovations in Methods, Techniques and Experimental Analysis Applied to Organic Archaeological Heritage: Paleobiology, Genetics and Archaeometry in Terrestrial and Marine Environments” (P18-FR-2100) has been the development of a guide for the appropriate use of experimental techniques applied to organic archaeological remains within research projects in Andalusia.

Based on our experience, acquired through the collaboration and participation of different professionals from several disciplines, our team has been able to define unified work methodologies in order to easily obtain results as reliable as possible. Thus, the methods tested in these procedures will allow us to develop protocols and/or technical guides for the collection and storage of organic samples from archaeological contexts and their subsequent analysis.

Hence, and as a preliminary step, a survey was carried out, aimed at verifying the following issues:

- to know to what extent archaeologists - both academic and professionals - are aware of the different existing analytical techniques they can use to study organic archaeological remains.
- to identify how these techniques are applied in both the academia and the professional practice, as well as if they are properly applied.
- to understand the needs and demands existing within the archaeological community in order to define these aforementioned protocols.
- to identify how the results are spread.

Based on the data obtained through the analysis of the answers derived from the survey, a work guide for archaeologists is being developed in this moment, including a protocol for the application of experimental techniques for the study of organic archaeological remains.

4 HOW DO WE LEARN COMPLEX KNAPPING METHODS? PRELIMINARY RESULTS

Abstract author(s): Cattabriga, Gloria (University of Ferrara) - Bargalló, Amèlia (IPHES, Institut Català de Paleoeologia Humana i Evolució Social) - Palomo, Antoni (Universitat Autònoma de Barcelona)

Abstract format: Oral

Human beings are not born stone knappers. Stone knapping is not an innate behaviour but a skill that must be acquired through the knowledge of its basic rules and practice. Yet, it is complicate to assess how it can be learnt. Although experiments have been made in this directions – only a handful for what concerns Middle and Upper Palaeolithic knapping methods – it is still considered a thorny topic. Aware of the delicate nature of the matter, we present preliminary results of several experimental knapping sessions as an attempt to shed light on this issue, notably on some of the knapping methods used in the Middle and Upper Palaeolithic. Thus, the Quina, the Levallois and laminar core reductions will be core reduction strategies to be tested. These complex knapping methods approach in different ways to core reduction, following volumetric, hierarchical and non-hierarchical concepts of exploitation. In each session, an expert knapper obtained several lithic items following one of the knapping methods and other participants try to reach the same goals. Since Middle and Upper Palaeolithic beginner knappers were already familiar with the procedure of core reduction, participants must be occasional knappers, knowing the basic rules of this practice without being experts or beginners neither. Throughout the development of the experiment, the expert gradually increased the explanation of each step of core reduction, from ignoring the other participant to fully helping them. The goal was to determine which teaching-learning strategy is sufficient to learn a precise complex stone flaking method. The outcomes will be compared to several archaeological assemblages which are currently being studied and, hopefully, they will furnish some insights on Palaeolithic learning as well.

5 NATIONAL LIST OF ANTIQUITIES STOLEN OR ILLEGALLY EXPORTED ABROAD-THE REGISTER OF CULTURAL PROPERTY LOST IN POLAND. ACCESS AN OPERATION

Abstract author(s): Wisniewski, Mariusz - Modzolewska, Agata (Ministry of Culture and National Heritage, Poland)

Abstract format: Oral

The National List of Antiquities Stolen or Illegally Exported Abroad collects data on museum thefts mostly occurring after 1970 and, since 1992, has also documented losses incurred by religious associations, private collectors and other institutions. The provincial conservator of historical monuments, the bodies of the Police, the Border Guard, National Fiscal Administration, prosecutor's office and directors of museums and libraries that are cultural institutions are

obliged to immediately communicate, for the purpose of listing, to the General Conservator of Monuments information about a monument stolen or exported abroad illegally. This register is also a repository of public information, accessible on the web via the service skradziona.zabytki.pl.

In the past years, the data collected in the National List has been a basis for the efforts to find and recover lost pieces of national heritage as well as fight illicit trafficking of artifacts, including archaeological heritage. Together with the scientific database of Polish war losses, the register provides the structural information for the process of research and restitution.

The National List of Antiquities Stolen or Illegally Exported Abroad is accessible to everybody regardless of their nationality and professional status, and thus we would like to present its use and content; encourage registering and research. We believe the general academic world would benefit from using the skradziona.zabytki.pl service and possibly could have valuable insights for the future. In the presentation, we will explain access, content, data protection and some famous examples of successful use.

6 CONSTRUCTING CONNECTED CONTESTS. OPPORTUNITIES AND CHALLENGES IN BUILDING AN ONLINE DATABASE OF GRAECO-ROMAN ATHLETES AND FESTIVALS

Abstract author(s): Williamson, Christina - van Nijf, Onno - Britton, Tom - Wiznura, Adam (University of Groningen)

Abstract format: Oral

In 2015 a team at the University of Groningen engaged in studying agonistic religious festivals as the base for some of the strongest networks across the Greek world. In order to more closely examine these networks, we developed a database with the aim of incorporating all of the known competitors at games in the post-classical world, largely drawn from epigraphic data. In 2016 we obtained a grant from the University of Groningen to further develop this as an online database, while another grant in 2021 allowed us to include a basic mapping functionality shows distributions and helps visualize the data. The result is <http://connectedcontests.org>. Essential data concern the , family, and origin of the competitor, the name of the festival and the city that hosted it, and a chronology, among other relevant data. With this information we can address questions such as: Where did athletes come from? Which cities did they compete in? How relevant were local festivals in a larger world of festivals? How does the image change over time? The database connects where possible to other online databases, such as the Packhard Humanities epigraphy database, the prosopographic database Trismegistos, and the ancient gazetteer Pleiades. In 2018 Connected Contests led to a major grant awarded by the Dutch Research Council (NWO), Connecting the Greeks. Multi-scalar festival networks in the Hellenistic world, with two PhD projects and a postdoc position (<https://connectingthegreeks.com>). Although it has already led to fruitful studies, Connected Contests is still a work-in-progress with challenges ahead concerning long-term data completion, current web design, and general maintenance in the face of progressive technologies.

7 SOME MASKS FROM THE SANCTUARY OF ARTEMIS ORTHIA AT SPARTA SEEN IN RELATION WITH THE TERRACOTTA FIGURINES

Abstract author(s): Koumpoura, Eirini (NCUA)

Abstract format: Oral

This paper intends to include material presented in the context of the PhD thesis entitled as “Terracotta masks from Greece, Cyprus and the Near East”, and aims for the presentation of some deliberately offered assemblages of masks in the sanctuary of Artemis Orthia at Sparta, considered in connection with the terracotta figurines. The re-examination of the material from the sanctuary has led to the identification of certain new types, whose dating was revised on the basis of the excavation data and the morphological characteristics. Except that it is often perceived that the masks generally constitute not only random faces but faces of certain types, which could directly revoke those of the figurines, these aforementioned, newly identified mask types confirm this perception even further. Their parallels in the form of terracotta figurines are even possible to be sought in the same or in other sanctuaries. Through this structural approach and their safe identification, the percentage of representation of the gods, the attendants of the deities, the demonic beings, the worshippers, and other types is highlighted. And these percentages are subjected to comparison with analogues from other sanctuaries. At the same time, some new data emerge concerning the attributes and the qualities of the worshipped deity or deities, but also the worshippers and even the performed cult practices.

8 PLASTER FACE CASTS AT THE EDGE: RESEMANTISATION OF CIPRIANI'S FACIAL MASKS AT THE ANTHROPOLOGICAL COLLECTIONS OF THE UNIVERSITY OF BOLOGNA

Abstract author(s): Nicolosi, Teresa - Battilani, Patrizia - Belcastro, Maria Giovanna (University of Bologna)

Abstract format: Oral

Anthropological collections were amassed in Europe and in the United States between the mid-19th and the early 20th century. Anthropologists gathered series of human skeletal remains by means of donations, archaeological expeditions, cemetery exhumations and occasionally through robberies. Human skeletal remains were collected to carry out morphometric studies and to describe human variation from a hierarchical point of view, including the study of phenology and racial typology. In addition to skeletal remains, anthropological collections were enriched by a large variety of items that were collected during the same scientific expeditions (e.g., ornaments, clothes, daily use or sacred objects and other ethnographical materials) along with photographs and instruments (e.g., anthropometric instruments, skin and hair colour charts). Among these, plaster face casts, that were originally used to show those alleged racial differences, represent peculiar objects, placed midway between human remains and artifacts.

The present contribution focuses on a series of original replicas of facial masks stored at the Anthropological Collections of the University of Bologna (Italy), realised by the Italian anthropologist Lidio Cipriani (1892-1962) during his scientific missions in Africa and Asia. The work and research of L. Cipriani were strictly linked to his historical and political background, being he one of the 'racist scientists' who signed the so-called Manifesto of Race in 1938 under the Italian Fascist regime. Because of the sensitive nature of these items, many museums have decided to remove them from displays, hiding them in the magazines or exposing some specimens during temporary exhibitions, aiming at 'decolonising' their collections. On the other hand, plaster face casts have a strong educational and social potential. For their peculiar nature, they must be treated with major respect and full awareness but may still be exposed and presented to the public with a proper narrative able to unveil their meaning and value.

9 FIGURING ECSTASY

Abstract author(s): Miller Bonney, Emily (California State University Fullerton)

Abstract format: Oral

The organizers of this session challenge us to reflect on the traditional lenses through which we view female figurines and to turn away from models in which prehistoric figurines are seen as evidence for goddesses and fertility cults. This paper argues that we should consider some renderings as expressions of internal, ecstatic states, as evidence for people's lived experiences in cult activity. An array of femiform vases from Pre- and Protopalatial Crete provide an instructive example of how we can benefit from changing our viewpoint. As evidence for ecstatic rites, which were inherently transitory and intended to transport individuals into a different reality the reflect how ecstasy alters perceptions of the material environment and challenges efforts. On Bronze Age Crete, the evidence, particularly as explicated by Peatfield and Morris, points strongly to the importance of ecstatic or shamanic elements in ritual activities from the end of the Early Bronze Age through the time of the palaces. Both peak sanctuaries and caves have yielded a range of objects that appear to speak to the importance of altered states, whether through hallucinogens or some other means. Altered states would seem particularly salient for a culture that, as Hamilakis and others have emphasized, placed a premium on intense sensory experiences that lowered the barriers of individualism. This paper considers the predecessors to the activities at the peak sanctuaries and looks to the tomb complexes and settlements that were the centers for ritual activity already in the first centuries of the Early Bronze Age. An array of different objects, including most notably the terracotta Goddess of Myrtos, provide evidence for a well-developed reliance on ecstatic conditions as part of spiritual behavior well before the transition to the peaks.

10 PORTABLE ART-IFACTS. CLAY FIGURINES FROM THE NORTHERN BALTIC ANALYSED

Abstract author(s): Lucenius, Jenni (University of Turku) - Brorsson, Torbjörn (Ceramic studies) - Stenbäck, Niklas (The government of Åland)

Abstract format: Oral

Clay figurines are a part of the material culture of hunter-gatherer societies in the Northern European Forest belt during the millennia of the Stone Age. Descriptions of the figurines as either zoomorphs, anthropomorphs or something depicting both, has generated interpretations related to ritual or intangible transformation, rather than social pressure or change. The research project "POTTERY, CHEMISTRY AND PETROGRAPHY: Neolithic figurines and vessels from Åland and the Baltic" investigate the manufacture and the provenance of clay figurines found on the Åland Islands, the Finnish mainland and in Sweden; from both the comb ceramic- and the younger Pitted ware tradition. The methods used are petrographic thin-section analysis and chemical ICP-MA/ES analysis. Results indicate that figurines have had social significance not only within the local communities, but also as portable objects in inter-regional communication. A re-evaluation of the so called Jettböle-type figurines found on Åland raises the question

whether we should look beyond stylistic representation and understand figurines as visual symbols for movement, innovation and (outside) social change?

11 SMALL - BUT WITH A UNIQUE IMPRINT IN HISTORY

Abstract author(s): Blaževicius, Povilas - Grižas, Gytis - Mikšaitė, Sigita (National Museum of Lithuania)

Abstract format: Oral

Like other European countries, Lithuania is constantly confronted with the illegal trade and smuggling of cultural property, which has increased significantly over the last few decades. Several factors have had a major impact: firstly, the growing popularity of metal detectors and legal gaps in the protection of cultural heritage, and secondly, the military conflicts in the region (e.g. the war in Ukraine, which started in 2014). State border guards, police, postal and other services that should be regularly involved in controlling the movement of goods and/or parcels do not yet have sufficient experience in identifying and promptly stopping the illegal “migration” of cultural property, especially archaeological finds. As Lithuania shares borders with Russia and Belarus, this applies not only to the internal but also to the external EU borders. While a few decades ago Lithuania was only a country of transit or origin of smuggling for archaeological artefacts, today it is increasingly becoming a destination country.

In this report, we aim to highlight the challenges faced by museums and the means by which they are joining forces with the institutions responsible for the protection of cultural heritage in Lithuania to help stem the tide of illegal trade and smuggling of archaeological artefacts. The presentation shows how Lithuanian archaeologists are combining educational and exhibition activities, shaping public opinion, providing expert services to state control and law enforcement authorities, etc. Local instruments that can improve the situation and the importance of joining global programmes are also discussed. The report highlights the ambition and the opportunity for museums to integrate specific information on the unique variety of jewellery and metalwork of the Baltic tribes, which is usually the object of illegal trade, into virtual heritage publicity programmes.

12 A LATE START OF THE UPPER PALAEOLITHIC. NEW ADVANCES ON THE EVOLVED AURIGNACIAN IN THE CENTRAL IBERIAN MEDITERRANEAN BASIN

Abstract author(s): Martínez-Alfaro, Álvaro - Eixea, Aleix (Universitat de València, Departament de Prehistòria, Arqueologia i Història Antiga) - Sanchis, Alfred (Museu de Prehistòria de València, Servei d'Investigació Prehistòrica, Diputació de València) - Villaverde, Valentín (Universitat de València, Departament de Prehistòria, Arqueologia i Història Antiga)

Abstract format: Oral

Over the last few years there has been a notable advance in the research of Aurignacian sites in the central Iberian Mediterranean basin. The Evolved Aurignacian is confirmed as the first Early Upper Palaeolithic technocomplex in the region. A phase of greater industrial indefiniteness in a technocomplex with a priori characteristics of pan-European unity. Hence, a review of the main characteristics of the technocomplex at the regional scale is required. The recent fieldwork carried out in Cova de les Malladetes (Barx, Valencia) and Cova de les Cendres (Teulada-Moraira, Alicante), as well as the revision of the unpublished assemblages from Cova Foradada (Oliva, Valencia) and Abric de la Ratlla del Bubo (Crevillent, Alicante) are key to characterising the lithic and bone industry and ornamental assemblages attributed to the Evolved Aurignacian.

The lithic technological approach reveals several laminar reduction strategies. As an operational continuum between the production of blades and bladelets from prismatic cores due to the reduced dimensions of flint nodules. The production of bladelets also corresponds to a separate chaîne opératoire, and is mostly carried out through the reduction of carinated end-scrapers and some burin-cores. And finally, the laminar bipolar knapping. The lithic and bone typological assemblage is consistent with the classical types of the Evolved Aurignacian, the Dufour bladelets subtype Roc-de-Combe are abundant, as well as two massive base tips recovered on antler from the Cova de les Malladetes. Regarding the ornament, various perforated *Lynx* sp. canine were recovered in Aurignacian sequences from the Valencian region, which suggesting a regional production tradition.

In sum, we propose a synthesis that updates our knowledge of the Aurignacian in a region where it had gone unnoticed in contrast with classical sequences from the north of Spain.

13 BALLAGHCULLIA: A MIDDLE BRONZE AGE SETTLEMENT AND CREMATION CEMETERY IN CO. ROSCOMMON, IRELAND

Abstract author(s): Walsh, Patrick (AMS; Dr Ros Ó Maoldúin)

Abstract format: Oral

A previously unknown Middle Bronze Age settlement was discovered and excavated in Ballaghcullia townland, Co. Roscommon, during archaeological works in advance of the N5 Ballaghaderreen to Scramoge Road Project. The

portion of the site that fell within the development contained the remains of at least five houses and geophysical survey suggests that several more exist outside its limit. In the excavated examples, internal hearths, concentrations of stakeholes and structural details such as porches were clearly defined. Artefacts and burnt bone were deposited within the houses in what appear to be structured patterns and all the houses were orientated roughly southeast. A small cemetery, comprising several pits containing cremation deposits, capped by clay and marked by stakes, was located to the south of the settlement. These elements and further structured patterning noted in depositions, the alignment and arrangement of the structures and the positioning of the different elements of the site relative to one another are likely to reflect and have the potential to help further our understanding of Bronze Age cosmological beliefs in Ireland. Along with the excavation of two burnt mounds adjacent the settlement and a paleoenvironmental core taken from a nearby bog, this site offers a previously unparalleled opportunity to investigate the later Bronze Age in this part of Ireland, the importance of which is increased by its location, less than 7km from the major archaeological complex of Rathcroghan.

14 SETTLEMENT AND RITUALS: THE CENTRAL PLACE IN NĚMČICE (CZECH REPUBLIC, MORAVIA)

Abstract author(s): Cizmár, Ivan (Institute of Archaeological Heritage Brno) - Čizmářová, Hana (Moravian museum Brno) - Popelka, Miroslav (Institute of Archaeological Heritage Brno)

Abstract format: Oral

The central agglomeration in NĚmčice represents one of the most important sites in the Iron Age – in the 3rd-2nd centuries BC Central Europe. The settlement area of 36 ha was determined by magnetometer prospection. A number of features were identified including houses, workshops and square enclosures, interpreted as sanctuaries. The artefacts from surface surveys include thousands of gold, silver and bronze coins and a large number of bronze artefacts including waste and semi-products. The glass collection includes hundreds of glass bracelets and beads as well as raw material, waste and semi-products. First excavations on the site after 20 years of surveys focused on the area of glass workshop, which represents the earliest glass working site north of the Alps. The uniqueness of glass personal ornaments, primarily bracelets, lay in the fact that they interconnected the entire La Tène cultural domain from in the 3rd-1st century BC, undoubtedly acting as an important element in the creation of both individual and group identity of inhabitants at the time.

The surprise was the discovery of a sunken hut with a hundreds of pieces of raw amber, beads and their semi-products. The discovery of a new amber workshop is remarkable, as in the period of 3rd-2nd century BC amber workshops appear only occasionally in Transalpine Europe. While amber jewelry is not commonly found at La Tène sites and is known more from individual wealthy graves, glass ornaments are relatively common and this type of artefact was apparently not reserved only for the wealthiest members of society. The excavations also focused on one of the three square enclosures. It is possible to assume the funeral use of the area in the middle La Tène Period. Later, after the end of ritual functions, intensive settlement activities took place here.

15 THE DEVELOPMENT OF THE ROMAN PERIOD ARTZI ROAD SETTLEMENT (ARTZIBAR/ARCE VALLEY, NAVARRE): CONTRIBUTIONS AND RESULTS OF GEOARCHAEOLOGICAL ANALYSIS

Abstract author(s): Mendizabal Sandonís, Oihane (Aranzadi Science Society; University of the Basque Country - UPV/EHU, Classical Studies Department) - Narbarte Hernandez, Josu (University of the Basque Country - UPV/EHU, Research Group on Heritage and Cultural Landscapes; Aranzadi Science Society) - Aiestaran de la Sotilla, Mattin (University of the Basque Country - UPV/EHU, Department of Geography, Prehistory and Archeology, Investigation Group of Prehistory IT-1223-19; Aranzadi Science Society) - Iriarte Avilés, Eneko (Universidad de Burgos, Dpto. Historia, Geografía y Comunicación; Aranzadi Science Society) - Agirre Mauleon, Juantxo (Aranzadi Science Society)

Abstract format: Oral

The Roman-period settlement of Artzi (Artzibar/Valle de Arce, Navarre), with a proven occupation between the 1st century AD and the end of the 4th century AD, is located on the southern slopes of a pre-Pyrenean area on the edge of the road that crosses the mountain range. Moreover, the enclave has continuity at a short distance with phases from the Middle Ages to the 20th century, through the development of a lordship that gives its name to the whole valley. However, there is a hiatus between the Late Antique and Early Medieval periods, which is one of the main unknowns when it comes to its study. In this respect, geoarchaeological sampling has been able to offer interesting data about the origin of the absence or scarcity of materials from Roman phases under the medieval and modern constructions, despite the fact that they are very close to each other and, a priori, seem to be in good locations. The sedimentological results indicate that the sedimentary dynamics of the study area, with an active alluvial activity probably controlled by changes in the climate, could have had a greater impact on the evolution of the settlement than expected.

16

GRASPING THE MEANING: SOCIAL POWER IN MEDIEVAL LANDSCAPE

Abstract author(s): Kozák, Vít (Department of Archaeology and Museology, Faculty of Arts, Masaryk University)

Abstract format: Oral

Research topics of medieval archaeology (eg. medieval towns, deserted villages, castellogy, ...) are to a certain extent separated lines of research producing new knowledge mostly only in terms of their own ‚rules‘. These isolated knowledge lines, orientation on producing historical narratives, limited geographical scale and supposedly atheoretical nature of significant part of medievalist research are some causes of isolation of medieval archaeology from the rest of discipline and social sciences as a scientific field. One of the ways to treat these shortcomings may be by formulating research questions concerning more general phenomena understandable by other social sciences and humanities. In my paper I will discuss power and its various manifestations and transformations in the medieval landscape (case study: Moravia in 6th to 16th century). In order to analyze relationships between anthropogenic features (structures) in landscapes that are reflecting power relationships in a given time and area it is necessary to determine which structures are bearing this kind of meaning. To do so I performed text analysis of archaeological, historical, anthropological and sociological literature concerning main aspects of social power – ideological, economic, military or political. Resulting text analysis presents a basis for creation of weberian ideal types of power connotations and their changes during time of different structures (e.g. castles, mining areas, villages, residences of nobility, monasteries, ...) in landscape. As historical and archaeological literature tend to employ concepts of power rather vaguely, the text analysis and aforementioned ideal types present explicit and theoretically sound means to take in consideration social power in the medieval landscape.

17

DARK AGES AND THEIR MONUMENTS: CRETE DURING THE MUSLIM/ARAB PERIOD

Abstract author(s): Klontza-Jaklova, Vera (MUNI - Ústav archeologie a muzeologie)

Abstract format: Oral

In the past, several periods have been referred to as the ‘Dark Ages.’ Two factors were usually evident when this term was used: The so-called Dark Age followed a collapse or radical change phase in social, economic, or ecological structures and the demise of an epoch supported by numerous historical sources. Thus the early Iron Age in the Aegean, the early Byzantine period, and the Thirty Years’ War in Europe were typically considered as Dark Ages. If we wanted to use this term for the least-known period of the archeology of Crete today, the period of the Cretan Emirate (A.D. 824/829 – 961) would certainly deserve the title.

The Greek-speaking, western and Christian historiography considered that this period demonstrated a decline in the level of civilization. Archaeological research automatically followed. Most coastal sites were a priori dated to the beginnings of Muslim expansion in the Mediterranean.

So we are witnessing a “systemic exclusion” of this period from the island’s history, albeit the Arab sources describe the island as socially and economically vibrant.

Today in Crete, there are no official monuments from this period, but that is all the more reason for us to wonder what the material culture (mobile and immobile) looks like and how to detect it.

How can we approach this period as a heritage issue?

The author presents the map and gazetteer of known remnants of the Arab period is presented:

- Coins (usually found outside archaeological contexts)
- Architecture (e.g. Knossos, Chandax fortification)
- Epigraphy (Inatos inscription)
- Ceramics
- Olive trees dated to the period
- Toponyms (e.g. Sarakina, Amiras)
- Borrowed words (e.g. Fari)

In the proposed contribution, the author suggests methodologies for researching the historical landscapes of the given period (e.g., modeling of settlement dynamics, criteria of targeted archaeological surveys, etc.).

18

„VENIT CONUENTUS LODHOSIAM..“ - NEW PERSPECTIVES ON MONASTIC LIFE IN LÖDÖSE

Abstract author(s): Blomqvist, Philip - Lennblad, Astrid (Lödöse museum)

Abstract format: Oral

According to the Annales Sigtuenses, a Dominican convent was founded in 1243 in Lödöse, a major town in medieval western Sweden. By all accounts, it was active for almost 300 years until it met its demise during the reformation of King Gustav Vasa. The convent was lost to time along with the town of Lödöse which lost its town privileges in the 1640s. Building material from the convent, churches and other monumental buildings were reused in the building of the towns successor Nya Lödöse and the convents exact location was forgotten. In the 1920s, antiquarian and art

historian Carl af Ugglas led an excavation of Lödöse which uncovered the Maria church. The Maria church was built by the Dominican brothers and functioned as a convent church. Further excavation of the surrounding areas took place in the 1960s when tenement houses were going to be built adjacent to the former convents location. The results were never published but all the data and documentation is still in the museums archives.

Since January 2023 archaeologists Philip Blomqvist and Astrid Lennblad have been in charge of a new project to better understand the monastic life in medieval Lödöse. The first aim of the project is to publish and interpret the results from the excavations in the 1960s. Furthermore to bring new perspectives on what has been established as empirical data. After publishing the next stage will be an excavation of the convents living quarters. Using interdisciplinary efforts (e.g. bioarchaeology, paleoethnobotany, geophysics) we aim to uncover new insights into the life of the medieval Dominican friars of Lödöse.

19 SAMI FISH-FARMERS AT THE COAST OF NORDLAND. A COASTAL SAMI AGRICULTURAL SETTLEMENT, WITH ROOTS DATING BACK TO THE MIDDLE AGES

Abstract author(s): Andersen, Oddmund (Árran lulesamisk senter)

Abstract format: Oral

The lecture presents the Coastal Sami population in Tysfjord in Northern Nordland. Written sources from the 16th-17th centuries document that the Sami had a mixed economy, with agriculture and fishing as part of the economy. Agriculture included both animal husbandry and grain cultivation, while fishing took place both in the local fjord and in the commercial fishing in Lofoten and near Senja. In addition, hunting and trapping were part of the economy. The settlement can be documented through settlement mounds. These are cultural monuments consisting of cultural layers formed by a settlement placed at the same site over a long period of time. 14C dating of bottom layers from some of these mounds shows that they go back to the Middle Ages. Archaeological investigations of the cultural layers dated to Middle age have traces of animal husbandry and a pollen analysis documented that the cereal cultivating may have older roots at one of the sites. In this lecture, the results from these investigations are presented. It is argued that the traces from the settlement mounds can be linked to a Sami agricultural settlement at the coast. The investigations can therefore help to expand our understanding of Sami settlement history and in this manner decolonize Sami history.

A. A FEW INTERESTING ZOOARCHAEOLOGICAL CASES FROM ŠIAULIAI MANOR IN LITHUANIA

Abstract author(s): Ziabreva, Viktorija (Klaipeda University, Institute of Baltic region history and archaeology)

Abstract format: Poster

Part of the Šiauliai Economy Manor homestead income had to be given to the maintenance of the Lithuanian-Poland rulers manor. Šiauliai Economy itself was founded in 1589. Since the beginning of the 17th century, the Economy of Šiauliai was constantly given over to manage it for loans to different owners. 1678-1696 it belonged to the king Jonas Sobieskis. The Economy was administered by an administration appointed by the current owners. Archaeological research in this place has been carried out since 1997. The largest zooarchaeological collection was collected during the archaeological researches of V. Ostašenkoviėnė in 2010, 2014 and 2017. A total number of 431 bone fragments of domestic (64.27%) and wild (13.46%) fauna, dated back from the 16th to the beginning of the 19th century, was collected and analyzed from the archaeological cultural layers of the manor. Due to small bone fragments, it was not possible to identify 22.27% of the examined zooarchaeological material. Although most of the bones have been preserved in fragments, there were three cases that deserve separate attention:

1. Ankylosis of the distal interphalangeal joint in a horse – found in the contents of the household pit, dated back from the middle to the second half of the 17th century;
2. Horse's metacarpal bone affected by desmoiditis ossificans ligamentum interosseum from the first half of the 17th century's cultural layer;
3. Horse's third metatarsal affected by spavin (chronic deformans tarsi) from the second half of the 17th – the beginning of the 18th century's cultural layer.

B. BROKEN FEMININITY - SOME THOUGHTS ON A NEWLY DISCOVERED LATE COPPER AGE BADEN IDOL FROM BUDAPEST, HUNGARY

Abstract author(s): Szász, Hajnal (Budapesti Történeti Múzeum)

Abstract format: Poster

A Late Copper Age Baden idol (flat idol) has been discovered recently at a large construction site in Budapest, Hungary. These types of objects are considered still a rather exceptional and rare find, though they are not completely uncommon. The Baden culture complex is well-researched, settlement and cemetery sites have both been excavated.

The aspect of everyday life is, however much better outlined than that of the spiritual one. Their belief system, as rich and colourful as it may have been, remains mostly unknown to this day.

Only three flat idols are known from Budapest, and a few dozen from Hungary. These objects are found almost always in a fragmentary state, usually thrown into a garbage pit. It is obvious that, when found, these are already in a secondary, post-manipulative state, where they were intentionally broken and discarded of. Though in the research community it is thought that these female figure statuettes served as an element in a home altar or in an initiation ritual, their true purpose is still unknown.

Is it connected to a fertility ritual that may have served the whole community, or is it about an individual's transition through various states of womanhood? What sort of spiritual process would require (if at all), to break and discard a stylized representation of a female body (with emphasized sexual traits)? And, where are the men in all this? Only one such object is known from the Carpathian-Basin and Southeast Balkans, representing a male form.

732 EUROPEAN RESEARCH COUNCIL FUNDING OPPORTUNITIES FOR YOU

Session theme: 2. Net Zero Archaeologies – Sustainability in the Past, Present and Future

Session organisers: Diaz-del-Rio Pedro (European Research Council Executive Agency)

Session format: Workshop

This session presents the European Research Council funding schemes (Starting, Consolidator, Advanced, and Synergy grants), the SH6 ERC Panel 'The study of the human past', and the potential ERC grants offer to applicants at different career stages, from post-doctoral researchers to well-established archaeologists.

A description of the schemes and main features of the evaluation process as well as an overview of ERC funding in this area will be followed by presentations by two ERC grantees. They will introduce their ongoing projects and offer some personal insights on the ideas, design, and practicalities behind their successful proposals. An experienced ERC panel member will join us to offer their perspective on the decision-making process. Finally, we will all be available for a question-and-answer session.

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- Joanna Bruck (University College Dublin)
- Maud Devolder (Ghent University)
- Arkadiusz Marciniak (Adam Mickiewicz University)
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